

Gender issues in agricultural education within African universities

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Gender Background Paper

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GENDER ISSUES IN AGRICULTURAL EDUCATION WITHIN AFRICAN UNIVERSITIES

EXECUTIVE SUMMARY

Agricultural higher education should be an integral part of Africa's development strategy given the centrality of agriculture to African economies. Strong and effective agricultural higher education systems play the vital role of producing the much needed skilled human resource to provide leadership, catalyse and facilitate Africa's development process. This role is likely to increase further in the new knowledge and technology-based and globalizing economy. However, for universities to effectively fulfil their role in Africa's modernization and development, they must attract and harness the full potential of women who make a significant contribution to small-scale agriculture, the farm labor force and day to day family subsistence. Failure to release the full potential of women in agriculture is a contributing factor to low growth, and food insecurity. No society can progress if some of its population are disadvantaged for reasons of gender, ethnicity or any other bias. In order to achieve the African Union's CAADP target of 6% annual growth in the agricultural sector as well as the Millennium Development Goals, gender disparities must be addressed and effectively reduced.

This paper makes a convincing case for paying attention to gender in higher education. Mainstreaming gender into agricultural higher education programs and encouraging more females to engage in agricultural sciences, research, innovations and technological development would lead to increased numbers of female agricultural professionals who together with their male colleagues would be able to better understand the needs of male and female farmers. The paper analyses gender issues in Africa's agricultural higher education and wider society and makes policy recommendations to enable higher education mainstream gender. The arguments and data are mainly drawn from two empirical studies conducted by RUFORUM¹ and SCARDA² supplemented by relevant literature

Societal barriers to women's education in science and agriculture

Educational institutions of higher learning constitute a microcosm of society and its structural inequalities. They are dynamically related to society, and therefore, gender inequality in higher education is a reflection of broader societal structural inequality. The factors that constitute a hindrance to gender balance in educational opportunity can be grouped into historical, socio-cultural, socio-economic, and structural/institutional categories. The most relevant variables and their respective weight inevitably reflect the internal dynamics of each country.

¹ RUFORUM (2010) Gender in higher institutions of learning in Eastern Central and Southern Africa: Issues paper. Kampala:RUFORUM

² Forsythe, L., Mangheni, M.N, and Martin, A. (2010) Attracting women into agricultural education: constraints and best practice. Strengthening Capacity for Agricultural Research and Development in Africa (SCARDA)

A key historical factor linked to gender inequality in higher education is the colonial legacy in sub-Saharan Africa. Colonial authorities promoted a few elite men in higher education, both whites and non-whites, whereas many people, especially women, were without opportunities. Overall, gender gaps in higher education are wider among the former French colonies compared to the British, as these countries have the lowest female enrolment rates from primary to higher education levels. This legacy of inequality entrenched during the colonial period persists today.

Socio-cultural factors, such as family expectations, societal images and gender stereotypes, act as a substantial barrier to girls and women's access to education. These restrict access, progression and the type of education that women and men select. Girls are encouraged to take up fields of study which correspond to the traditional household roles of women as wives and mothers. These roles are promoted and reinforced by educational institutions and family expectations, and as a result, the uptake of and attainment in sciences and agriculture among girls has been low while enrolment in 'softer' subjects is high. Mathematics, science in general, and agriculture in particular, are perceived as masculine disciplines, where women do not possess the physical, mental and social capabilities to succeed and will not obtain as highly remunerative employment as men.

Sexual harassment of girls and women ranging from verbal to rape, physical abuse and violence, is another significant barrier to their participation and progress through all levels of education. Sexual harassment is particularly feared when girls and women are travelling to or from school, especially in rural areas, or during classes. Consequently, parents may refuse to send their daughters to school if they are required to live away from home, if they are to study under male instructors or attend mixed-gender classes. In countries experiencing conflict, women's participation and progression in education suffers to an even greater extent due to sexual harassment.

Socio-economic barriers to women's education include level of income, gender roles, parents' education and geographical location. Overall, trends in sub-Saharan Africa reveal that the higher the socio-economic status of families, the more likely male and female youth will progress into higher education. For women, this trend is particularly strong, as lower enrolment and higher drop-out rates for girls in school is directly related to economic status and poverty. When resources are constrained, parents in many parts of Africa are more likely to invest in education for boys rather than girls. This is because it is perceived that girls will leave their families after marriage, whereas boys are expected to provide for their parents on an ongoing basis. In addition to poverty, lack of time and mobility are constraints to girls accessing education. In many countries in sub-Saharan Africa, girls are expected to participate in more household tasks compared to boys. These responsibilities increase as they grow older, resulting in a decline in participation in education with increasing age. Parents' higher education attainment, which is also related to socio-economic status, appears to be a factor in women's participation in education, particularly higher education. Family background can create an enabling (or disabling) environment where higher education and particular subjects are considered more or less appropriate.

Other obstacles for women in education is geographical location, where rural girls are less likely to attend school than rural boys and urban dwellers, and lack of transportation which affects females more than males where female mobility is restricted.

The structure of educational institutions also plays a significant role in the education and career choices of girls and boys, men and women. Because learning materials, teaching methods and attitudes of teachers are embedded with sets of power relations and gender norms, they often perpetuate gender stereotypes that can limit girls' achievement in the sciences. For example, the content of school text books has images of women participating in household functions constraining women's participation in subjects that are considered more masculine. In many instances, images of gender appropriate careers are replicated in the media and supported by national policy and reinforce the appropriateness of certain fields for men and women. Teachers also reflect a gender bias in their attitudes towards girls' ability in math and science yet they play a significant role in the confidence of young girls in these subjects and the disciplines they chose to pursue. The gender composition of the teaching staff in different fields of study may influence the choices made by students as in some societies, women may feel more comfortable being taught by women, or men may have some hostility towards female students. Female teachers also act as role models to female students.

The net effect of the above factors is a wide gender gap in participation and progress of girls compared to boys in pre-university education. In 1995, UNESCO declared that women and girls were the "largest single category of persons denied equality of educational opportunity in the world". This systemic inequality is what led to the creation of Millennium Development Goal Three, which challenges developing countries to eliminate gender disparity in all levels of education. Unfortunately, trends in sub Saharan Africa indicate that this goal will be far from reached by 2015. Sub Saharan Africa, along with South East Asia, has the lowest school enrolment rates at all levels of education for both boys and girls in the world, and also has the largest gaps in enrolment between girls and boys. In this region, over half of the 44 million children not enrolled in primary school are girls and 93 girls start school for every 100 boys. Girls also have less years of schooling than boys. In 2008, the number of expected years of schooling in the region was 9.0 years for boys compared to 7.6 years for girls and the difference (1.4 years) was the same as in 1999. Girls also have higher repetition rates than boys and are less likely to attend good quality schools with adequate resources.

The participation rates of girls in sub Saharan Africa worsen in secondary school, where although enrolment rates decline for both girls and boys, the decline is much larger for girls. Togo, Chad, the Central African Republic, the Democratic Republic of the Congo and Somalia show the most significant disparities in secondary school enrolment for girls. In contrast, girls are strongly favoured in Lesotho, Namibia, Sao Tome and Principe and in Seychelles.

At the secondary level, girls mostly select 'arts' stream and boys the 'science' stream which impacts on the ability of women to take up science, and agricultural education at the tertiary level. The girls who take science and math-related

subjects in secondary school often score significantly lower than boys. The net effect of these issues is a small pool of girls completing secondary education consequently limiting the number joining tertiary institutions more so for science related courses³.

Gender issues within African agricultural universities

Besides the gender issues in the wider society, there is a range of issues within Africa universities which impede women's access, retention, and performance at this level.

Gender disparity in enrolment in agricultural training courses

Trends in women's enrolment in agricultural higher education indicate improvement over time in Sub Saharan Africa. However, despite the initiatives introduced by universities in various countries, the number of women as a proportion of the total enrolment in agricultural programmes has not increased in the last five to six years, despite an increase in the absolute number. Findings from universities in the Eastern, Central and southern African (ECSA) region reveal that overall one in every four undergraduate agricultural students is a female. The disparity becomes even more evident at the postgraduate level where only about 16% of the graduate students are women. The limited numbers of girls who meet requirements for admission due to fewer numbers of girls taking science subjects is one of the key factors curtailing attainment of gender parity. Another key limiting factor for women's progression to postgraduate degree level is society's expectation that women should marry early, yet the university environment lacks sufficient supportive services for married female students. Therefore, women have to make a choice between pursuing higher degrees and establishing a stable family.

Effect of "preconceived" negative perceptions of agriculture

Negative perceptions of agriculture in many Sub Saharan Africa countries has prevented uptake by both men and women, but women especially. Agriculture is associated with poverty, drudgery and poor working conditions. There is also a perception that agricultural careers involve fieldwork in remote communities, which conflict with perceptions that women should not travel in order to be close to home to facilitate reproductive roles. Female students in agriculture also experience negative attitudes from other students, teachers and family who question their choice of field, which makes it difficult for them to feel confident in their studies.

Once in higher learning institutions, women are more likely to select courses within agriculture degrees that are perceived to correspond to their gender roles and are more socially-orientated, similar to the trends described at the secondary school level. Examples of such courses preferred by women include

¹ Association of African Universities 2006: A Tool Kit for Mainstreaming Gender in Higher Education in Africa

Home Economics and Human Nutrition and Food Science and Technology, while in contrast, men are more likely to take agricultural engineering or Agronomy.

Content and experience of agricultural learning

Formal and informal delivery of the curriculum in agricultural higher education, in terms of course content and the learning experience often reveals evidence of gender bias that can affect gender-specific attrition and retention. Classroom practices, course materials and course content reflect the underlying values of institutions and wider society incorporating gender biases and stereotypes that can hinder gender-sensitive learning. There are instances where female students receive less 'hands-on' experience than men in some field activities due to the gender stereotypes of women not possessing the physical strength or wherewithal to carry out practical tasks, such as inseminating animals or castration. In such practicals women would often be asked to take notes and record findings, instead of participating in the experiment or the activity itself. This puts women at a disadvantage regarding acquisition of practical skills.

The inclusion of gender content in agricultural courses to improve students skills in gender analysis is beginning to take root, which could not only improve capacity of graduates to address gender issues but can also make the course content more relevant and applicable to the lives and experiences of female students. A number of Universities have some course units with elements of gender analysis; however, they are mostly on an elective basis.

The culture within universities

There are cultures which make universities unfriendly to women and students from disadvantaged regions. The expression of gender stereotypes and biases are often reflected in institutional behaviour, attitudes and language used by students and staff, which can marginalise women in agricultural training programs. There are instances where female staff experience gender based stereotypes and biases during promotion procedures. Female students also feel uncomfortable with inappropriate sexual remarks by male lecturers during class which would embarrass female students. Many studies have also reported the prevalence of sexual transactions for marks, where female students feared approaching male lecturers for fear of accusations of seeking sexual transactions for marks. There is also evidence of higher learning institutions displaying intolerant attitudes towards pregnant students or female students who are considered to dress provocatively. This 'masculine culture' in higher education creates an insecure environment for women's participation in university life.

The learning environment

It is important to take the practical needs of women into account in the learning environment to improve levels of participation and reduce attrition among female students. Such needs include provision of services and facilities needed by females during menstruation such as ample facilities for sanitation and personal hygiene, as well as health care services on campus with medicines that actually work against "period pains", migraine and nausea. Other practical needs of women are childcare and support services for pregnant students which if not

available can prevent women from progressing and completing their education. The poor treatment of pregnant women and students with childcare responsibilities largely reflects negative attitudes and stereotypes of women, often resulting in women dropping out of studies. Pregnancy is often considered a 'problem' by institutions, who consider that responsibility lies solely on female students to restrain themselves from sexual conduct. Support for practical needs of women is inadequate in most universities and where some initiatives exist, their effectiveness is undermined by limited funding, training and support from management.

In addition, the terms of study often constrain women from combining studies with reproductive and care giving roles. Flexible women friendly modes of delivery such as distance learning and evening classes are not often offered. The lack of suitable accommodation provided by higher learning institutions is another issue for both men and women, but more so for women. Many universities do not provide secure environments for post graduate and mature students. On campus accommodation is often offered only to undergraduates, where other students must take up accommodation off-campus which raises issues around safety and costs of transportation. There is also a lack of facilities for students with families, even for postgraduate students from outside the countries they are studying in.

Some universities have established a gender focal point person to establish oversight and responsibility for gender issues at the department level. However, in many cases, gender focal points often do not have a background or experience in gender and in some cases, there is no formal application or hiring procedures. This often results in recruitment of either unqualified or uninterested people in these positions.

Gender issues affecting female staff in Faculties of Agriculture

Women constitute a small minority of the staff in agricultural faculties in African universities especially in higher positions compared to men. The career progression for women is much slower than that of men. Studies have reported the proportion of women academic staff in agriculture faculties as low as between 6.1% to 20%. Within the faculties, higher numbers of female staff tend to be found in departments teaching courses that have traditionally been dominated by women, such as food science and technology. Women also tend to hold more junior positions. With the exception of a few universities, the vast majority have one or no woman professor. Though there is no formal discrimination of women in career progression, institutional factors as well as external factors (marriage, domestic responsibilities and culture) limit their progression. The external factors limit academic women's participation in research, culminating into fewer publications which contribute heavily on points for promotion. Another issue is that in most universities, there are few women in leadership positions with one study reporting only 17% of the management positions in faculties of Agriculture occupied by women compared to 83% by men. Some of the factors that explain this gap include the lack of women with relevant qualifications especially in fields that have historically been dominated by men, and reluctance by some qualified women to take up administrative responsibility due to the challenges of balancing career and care giving responsibilities. In addition, women in leadership

positions sometimes feel isolated and colleagues (male and female) tend to challenge rather than support them. The absence of women in senior positions means that they are largely absent from discussions where issues pertaining to higher education are deliberated and this may result in biased decision making.

Status of institutionalization of gender mainstreaming in African universities

African universities are at varying levels of establishing institutional frameworks within which action on gender can be undertaken at all levels. Presence of a gender policy coupled with structures and resources for implementation signals commitment to taking steps in gender planning for the institution's sustenance, promotion of gender justice, the management and prevention of gender violence, discrimination and injustice. However, only a few universities have gender policies and even for the universities where gender policies exist, the extent of their implementation varies. Due to challenges including lack of adequate human and other resources, absence of clear and measurable action plans, and resistance from some senior staff, full scale implementation of gender policies within universities is still limited.

Overall, while some initiatives undertaken by universities to increase enrolment of women in agriculture have shown encouraging results, many have not been effective in significantly increasing the number of women in higher education in agriculture or the sciences. Genuine gender mainstreaming with a potential to transform African society is lacking. If Africa is to realise the development and gender parity targets set in global declarations such as the MDGs and NEPAD, much more needs to be done. Barriers to gender balance in educational opportunity are complex and multifaceted ranging from the broader political context, to the community, the family, pre-university educational institutions, teacher training at all levels, and universities. Effective interventions must therefore target all these dimensions of society.

We need the right policies in place, as well as commitment and leadership at the highest level. It is only then that ample resources will be committed to the cause of gender equality for a long enough period to result in transformation of society in general and higher education in particular.

1.0 INTRODUCTION

Poverty reduction, sustenance of food security and economic growth in Sub-Saharan Africa (SSA) requires improving agricultural productivity as well as human resources and technologies (World Bank, 2008; NEPAD, 2010), given agriculture's dominant role in the economies of most SSA countries (IBRD, 2007). Agricultural higher education is therefore an integral part of any development strategy based on economic growth and poverty reduction. Strong and effective agricultural higher education systems play the vital role of producing the much needed skilled human resource to provide leadership, catalyse and facilitate Africa's development process (IBRD, 2007) and this role is likely to increase further in the new knowledge and technology-based and globalizing economy (Assie-Lumumba, 2006). However, for universities to effectively fulfil their role in Africa's modernization and development, key challenges need to be addressed and among these is the failure of higher agricultural education institutions to attract and harness the full potential of women despite their significant contribution to small-scale agriculture, the farm labor force and day to day family subsistence⁴. According to the 2008 World Development Report *Agriculture for Development*, failure to release the full potential of women in agriculture is a contributing factor to low growth and food insecurity. The African Union through NEPAD established CAADP, which aims at achieving a 6% annual growth in the agricultural sector. Yet for agricultural growth to fulfill this potential, gender disparities must be addressed and effectively reduced (World Bank, 2009).

This paper attempts to make a convincing case for paying attention to gender in higher education. It analyses gender issues in Africa's agricultural higher education and wider society and makes policy recommendations necessary to enable higher education streamline gender in order to realize its full potential in Africa's development process. The arguments and data are mainly drawn from two empirical studies conducted by RUFORUM⁵ and SCARDA⁶ supplemented by relevant literature.

2.0 THE IMPORTANCE OF GENDER IN AGRICULTURAL HIGHER EDUCATION

Agricultural growth and development is dependent on the critical mass of a well qualified human resource base, both male and female. Mainstreaming gender into agricultural higher education programs and encouraging more females to engage in agricultural sciences, research, innovations and technological development would lead to increased numbers of female agricultural professionals who together with their male colleagues would be able to better understand the needs of farmers within a gendered perspective. While the Millennium Development Goal (MDG) 3 target recognizes that education for girls is one of the most

⁴ <http://www.fao.org/sd/fsdirect/fbdirect/fsp001.htm>

⁵ RUFORUM (2010) Gender in higher institutions of learning in Eastern Central and Southern Africa: Issues paper. Kampala:RUFORUM

⁶ Forsythe, L., Mangheni, M.N, and Martin, A. (2010) Attracting women into agricultural education: constraints and best practice. Strengthening Capacity for Agricultural Research and Development in Africa (SCARDA)

effective ways of reducing poverty, it is also evident that gender equality underpins progress on all the MDGs. Development makes little sense if half the population is prevented from fully benefiting from, and contributing to it (DFID, 2009). The United Nations Development Program (UNDP) notes that “When development is not ‘en-gendered,’ it is ‘en-dangered’”. No society can progress if some of its population are disadvantaged for reasons of gender, ethnicity or any other bias.

In the Millennium Declaration of September 2000, member states of the UN made a commitment to eliminate gender disparity in all levels of education by 2015. Global efforts towards achieving gender equality through mainstreaming gender into all policies, systems, programmes and project processes, have led to some significant achievements over the years. Progress has been made in training and education of women and girls at all levels, especially in countries that have marshaled the requisite political commitment and allocation of resources. Between 1999 and 2006, the average net enrollment of girls in primary schools increased in SSA from 54 percent to 70 percent⁷. Measures have been taken to remove gender biases from education and training by initiating alternative education and training systems to reach women and girls.

However, significant inequalities still remain. Girls are still missing out on primary and secondary education in far greater numbers than boys, thus depriving entire families, communities and economies of the proven and positive multiplier effects generated by girls’ education and instead aggravating poverty, the spread of HIV/AIDS, and maternal and infant mortality. Recent literature reveals that 70% of the world’s 130 million out of school youth are girls. Global estimates indicate that more than 100 million girls are involved in child labor such as domestic work or farm work⁸. Lack of education robs an individual of a full life. It also robs society of a foundation for sustainable development as education is critical in improving health, nutrition and productivity. Gender gaps widen at the higher levels of education in general but more specifically in the science and technological fields. Therefore, the proportion of women in agricultural higher education and issues undermining their effective participation warrant special attention.

3.0 GENDER AND THE WIDER SOCIETY: IMPLICATIONS FOR HIGHER EDUCATION

Gender issues in higher education cannot be looked at in isolation. It is of paramount importance to understand the broad national and community level context within which the universities are situated because of their pervasive influence. In addition, an analysis of the global and historical factors is necessary to provide a comprehensive understanding of the forces at work so as to come up with effective, feasible and realistic policy interventions. As Assie-Lumumba (2006) correctly points out, “educational institutions of higher learning constitute a microcosm of society and its structural inequalities. They are dynamically related to society. Gender inequality in higher education is a reflection of broader societal structural inequality”.

¹http://www.ifuw.org/fuwa/docs/Education_of_Girls_Africa.pdf

² World Economic Forum , Global Gender Gap Report 2009.

This inequality is explained by the dynamic interface of various explanatory factors with individual and/or combined weight that vary according to different historical moments. In Africa, external factors under the formal colonial rule played a decisive role, while the choices made by African policy makers and social cultural factors became more prominent in the post-colonial era (Assié-Lumumba, 2006). The factors that constitute a hindrance to gender balance in educational opportunity can be grouped into historical, socio-cultural, socio-economic, and structural/institutional categories. The most relevant variables and their respective weight inevitably reflect the internal dynamics of each country. The wider societal factors preventing women from taking up higher education in many African countries are discussed below.

3.1 Historical factors

Some scholarship links the colonial legacy in sub Saharan Africa to gender inequality in higher education (Assié-Lumumba, 2006). Assié-Lumumba (2006) argues that colonial authorities promoted a few elite men in higher education, both whites and non whites, whereas many people, especially women, were without opportunities. Overall, gender gaps in higher education are wider among the former French colonies compared to the British, as these countries have the lowest female enrolment rates from primary to higher education levels. Assié-Lumumba argues that this legacy of inequality entrenched during the colonial period persists today and as a result, the continent overall has low representation of women in all levels of education.

Assié-Lumumba (2006) further argues that the colonial history in sub Saharan Africa continues to be reflected in current policies. She reported that in the post-independence era, for example, policy makers throughout Africa were making efforts to address gender inequality in education, which was subsequently reversed with Structural Adjustment Policies (SAPs) of the World Bank. Policies addressing inequality were removed by SAPs, such as in Mali the policy of providing compensation to parents for lost labour from sending their girl children to school. Furthermore, policies such as the introduction of school fees under SAPs prevented African countries from achieving universal enrolment, such as in Tanzania.

3.2 Socio-cultural factors

Socio-cultural factors, such as family expectations, societal images and gender stereotypes, act as a substantial barrier to girls and women's access to education (Asimeng-Boahene, 2006, Assié-Lumumba, 2006; Van Crowder, 1997; Acker et al, 1998). These factors often result in gender discrimination that is so pervasive that it becomes seen as cultural or as being natural. These create various discourses on gender and education which restrict access, progression and the type of education that women and men select.

The different roles and responsibilities of men and women are developed through complex processes of socialisation. This process for girls entails conditioning for the roles of wives and mothers in the private sphere, while skills in public life and confidence are emphasised for boys (Karl et al, 1997). This has significant

implications for the way women's education is understood and valued in society. For example, some have a negative attitude toward women's education, believing that an educated woman, particularly a woman educated in a male-dominated discipline, can be too independent, promiscuous or challenging to her spouse. Other perceptions are that women's education can be a strategy for women to improve the likelihood of marrying a better husband and living a comfortable life (Martineau, 1997; Karl et al, 1997). In either case, women's education is either perceived as a hindrance to fulfilling gender roles and responsibilities or it is not important in its own right.

Kenya Mahari System (UNESCO, 2010)

In Kenya, marriage is transacted through mahari or bride wealth. In rural areas, cattle, goats and food are given to the bride's family, whereas money or other goods may be exchanged in urban areas. These practices have significant implications for women in education as daughters who are educated have more expensive mahari. In rural areas, a large mahari therefore can be considered as a liability to men due to the 'additional' expense for education, whereas educated women in urban areas are more likely to have a smaller mahari as the practice is considered to be outdated. Parental preference is generally for sons in education although research indicates that mothers sometimes prefer to educate daughters because schooled daughters are more likely to take care of their elderly mothers.

Gender stereotypes and ideologies are socially constructed and shape the choices of men, women, boys and girls in education. They encourage girls to take up fields of study which correspond to the traditional household roles of women, a trend not limited to sub Saharan Africa (Karl et al, 1997, Martineau, 1997). These roles are promoted and reinforced by educational institutions and family expectations, and as a result, the uptake of and attainment in sciences and agriculture among girls has been low while enrolment in 'softer' subjects is high (Martineau, 1997; UNESCO, 2010; Forsythe et al, 2010).

Science in general, and agriculture in particular, are also perceived as masculine disciplines, where women do not possess the physical, mental and social capabilities to succeed and will not obtain as highly remunerative employment as men (Odejide et al, 2006). The choice of study is often made by girls and women themselves, but it is often influenced by subtle or not so subtle pressures from teachers, parents and society in general (Karl et al, 1997). Several influences in the educational environment itself have been found to combine with societal and parental expectations and beliefs to virtually steer girls away from mathematics and science classes. Girls often receive differential treatment from teachers, even female teachers, who tend to favor boys and often expect them to perform better than girls, and there is an absence of strong role models for women (Martineau, 1997).

3.3 Sexual harassment

Sexual harassment of girls and women is another significant barrier to their participation and progress through all levels of education. Sexual harassment, ranging from verbal to physical abuse and violence, is particularly feared when girls and women are travelling to or from school, especially in rural areas, or during classes (Bunyi, 2003; Martineau, 1997). At the secondary school level, the high levels of sexual harassment have been related to the low number of girls proceeding into higher education in South Africa (Unterhalter et al, 1992). The fear of abuse and harassment has had the consequence of parents refusing to send their daughters to school if they are required to live away from home, if they are to study under male instructors or attend mixed-gender classes (Karl et al, 1997; Martineau, 1997).

In countries experiencing conflict, women's participation and progression in education suffers to an even greater extent due to sexual harassment. In the Democratic Republic of Congo for example, rape was used as a weapon during war which contributed to a great level of insecurity for girls and women and prevented them from attending or teaching at school. War also creates economic insecurity where girls may be required to enter the labour market or contribute to household subsistence or care for orphans or family members instead of attending school (UNESCO, 2010).

3.4 Socio-economic factors

Overall, trends in sub Saharan Africa reveal that the higher the socio-economic status of families, the more likely male and female youth will progress into higher education (Assié-Lumumba, 2006). For women, this trend is particularly strong, as lower enrolment and higher drop-out rates for girls in school is directly related to economic status and poverty. The poor are often more likely to cite lack of money as the main reason for not having their children, both boys and girls in school, but girls are particularly disadvantaged because when resources are constrained, parents in many parts of Africa are more likely to invest in education for boys rather than girls (UNESCO, 2010; Van Crowder, 1997). In some parts of Africa, girls' education is not seen as a worthwhile investment as they will leave their families after marriage, whereas boys are expected to provide for their parents on an ongoing basis and are seen to have more opportunities in the labour market and have access to higher salaries (Karl et al, 1997). For example, young girls living in urban slums in Kenya show a decline in school enrolment at age nine, which is two years before male or rural enrolment levels begin to fall (Mugisha, 2006 in UNESCO, 2010). This can contribute to intergenerational poverty where girls who do not receive an education are more likely to marry early and have children that are also not educated (Karl et al, 1997; Van Crowder, 1997).

Closely related to socio-economic status, is the lack of time and mobility that are constraints to girls accessing education. In many countries in sub Saharan Africa, girls are expected to participate in household tasks which women are often responsible for, such as collecting water and firewood, childcare, cleaning, cooking and contributing to agricultural labour. These responsibilities increase as

they grow older, resulting in a decline in participation in education with increasing age (Karl et al, 1997).

Parents' higher education attainment, which is also related to socio-economic status, appears to be a factor in women's participation in education, particularly higher education. Family background can create an enabling (or disabling) environment where higher education and particular subjects are considered more or less appropriate (Mama, 1996; Odejide et al, 2006; Forsythe et al, 2010).

Other obstacles for women in education is geographical location, where rural girls are less likely to attend school than rural boys and urban dwellers, and lack of transportation which affects females more than males where female mobility is restricted (Karl et al, 1997; UNESCO, 2010).

3.5 Structural factors

The structure of educational institutions also plays a significant role in the education and career choices of girls and boys, men and women. Because learning materials, teaching methods and attitudes of teachers are embedded with sets of power relations and gender norms, they often perpetuate gender stereotypes that can limit girls' achievement in the sciences. For example, a study by Friedman (1992) analysed the content of school text books in Morocco and found that images of women were only of women partaking in household functions such as cooking, care giving, taking care of the home in general (in Assié-Lumumba, 2006). Unterhalter et al (1992) argues that in South Africa curriculum content is one aspect which can constrain women's participation in subjects that are considered more masculine. In many instances, images of gender appropriate careers are replicated in the media and supported by national policy and reinforce the appropriateness of certain fields for men and women (Martineau, 1997; Odejide et al, 2006).

Acker et al (1998) found that in Kenya, female students had significantly higher marks in non science subject areas, which was related to the lack of good quality science teachers, resources and facilities in single-sex schools. Teachers also reflected a gender bias in their attitudes towards girls' ability in math and science (Acker et al, 1998). Forsythe et al, 2010 found that teachers play a significant role in the confidence of young girls in certain subjects and the disciplines they chose to pursue.

The gender composition of the teaching staff in different fields of study may influence the choices made by students as in some societies, women may feel more comfortable being taught by women, or men may have some hostility towards female students (UNESCO, 1995; Karl et al, 1997). Female teachers also act as role models to female students. The level of female teaching staff is in fact, correlated to the enrolment rates of girls, where countries with the lowest secondary enrolment rates among girls typically have the lowest proportions of female teachers in primary education. Unfortunately, sub Saharan Africa has the lowest level of female teachers in the world and it is dropping. At the primary level, less than one teacher in five is female in three Central and Western African countries: Benin (19%), Central African Republic (14%) and Liberia (12%).

In conflict-affected Somalia, approximately 17% of primary teachers are women. In contrast, women represent a clear majority in Southern African countries including, Botswana (80%), Lesotho (77%), South Africa (77%) and Swaziland (70%) (UNESCO, 2010). Representation of female teachers is particularly problematic in rural areas, where the rate of girls' participation in school is the lowest.

4.0 GENDER GAP IN PARTICIPATION AND PROGRESS IN PRE-UNIVERSITY EDUCATION

In 1995, UNESCO declared that women and girls were the "largest single category of persons denied equality of educational opportunity in the world". This systemic inequality is what led to the creation of Millennium Development Goal Three, which challenges developing countries to eliminate gender disparity in all levels of education. Unfortunately, trends in sub Saharan Africa indicate that this goal will be far from reached by 2015. This pervasive inequality in access to education for girls and women highly influences the likelihood of women taking up higher education in agriculture.

Participation in primary and secondary school is directly related to the likelihood of women taking higher education in general and agricultural higher education specifically (Assie-Lumumba, 2006; Van Crowder, 1997). FAO case studies of Côte d'Ivoire, Jordan, Nigeria and the Philippines reveal that countries with the highest female literacy rates and enrolment in primary and secondary school had higher female enrolment rates in higher education in agriculture. For example, in the Philippines 46% of women complete secondary school and 52% of students in higher education in agriculture are women. In Nigeria the reverse is true, where the gross secondary enrolment ratio for women is 25%, and less than 25% of those studying agriculture are women (Van Crowder, 1997).

Sub Saharan Africa, along with South East Asia, has the lowest school enrolment rates at all levels of education for both boys and girls in the world, and also has the largest gaps in enrolment between girls and boys (Van Crowder, 1997). In this region, over half of the 44 million children not enrolled in primary school are girls and 93 girls start school for every 100 boys (UNESCO, 2010). Girls also have less years of schooling than boys. In 2008, the number of expected years of schooling in the region was 9.0 years for boys compared to 7.6 years for girls and the difference (1.4 years) was the same as in 1999 (UNESCO, 2010). Girls also have higher repetition rates than boys and are less likely to attend good quality schools with adequate resources (UNESCO, 2010).

The participation rates of girls in sub Saharan Africa worsen in secondary school, where although enrolment rates decline for both girls and boys, the decline is much larger for girls. Togo, Chad, the Central African Republic, the Democratic Republic of the Congo and Somalia show the most significant disparities in secondary school enrolment for girls. In contrast, girls are strongly favoured in Lesotho, Namibia, Sao Tome and Principe and in Seychelles (UNESCO, 2010).

Secondary school is also where gender differences in course selection become evident, as it is at this level where students must choose between and 'arts' or

'science' streams. This marks a turning point in the education system, as girls and boys generally will receive the same curriculum during primary education. At the secondary level, girls mostly select 'arts' stream and boys the 'science' stream (UNESCO, 2010), which impacts on the ability of women to take up science, and agricultural education at the tertiary level (Karl et al, 1997). For girls who take science and math-related subjects in secondary school, girls often score significantly lower than boys (FEMSA, 1997, in Asimeng-Boahene, 2006).

The net effect of these issues is a small pool of girls completing secondary education consequently limiting the number joining tertiary institutions more so for science related courses⁹. Literature on gender gap in education for selected countries in the ECSA region, reveals that overall there are nine females to every ten males in secondary education while there is only six females to every ten males in tertiary institutions (RUFORUM, 2010). With the exception of Lesotho and Botswana, there are fewer females in secondary and tertiary education in all other countries of RUFORUM member universities (Table 1). In Kenya out of the 16,629 qualifiers to undergraduate programmes from the 2007 Kenya Certificate of Secondary Education (KCSE) examinations only 31.4% (5,228)

Table 1: Education Enrolment, Ratio of female to males for selected countries in the ECSA region.

Country	Ratio of female to males by level of education		
	Primary ¹⁰	Secondary ¹¹	Tertiary ¹²
Lesotho	1.04	1.55	1.19
Botswana	1.03	1.14	1.00
Zimbabwe	1.01	0.96	0.63
Zambia	1.01	0.87	0.46
Malawi	1.07	0.91	0.51
Mozambique	0.93	0.83	0.49
Uganda	1.03	0.90	0.62
Kenya	1.00	0.91	0.57
Tanzania	0.99	0.87	0.48
Ethiopia	0.92	0.64	0.34
Mean	1.00	0.96	0.63

Source: World Economic Forum: Global Gender Gap Report 2009.

¹⁰ Female net enrollment over male value

¹¹ Female net enrollment over male value

¹² Female gross tertiary enrollment over male value

⁹ Association of African Universities 2006: A Tool Kit for Mainstreaming Gender in Higher Education in Africa

were women while girls accounted for 46% out of the 305,000 candidates for the 2008 KCSE examinations (the Daily Nation, March 6th 2009).

Some of the barriers to girls' education and hence the small pool of girls who join tertiary institutions are:

- Lack of role models to inspire young girls
- Burden of housework – where girls are expected to accomplish the bulk of housework in the home while their male counterparts may commit the time to study
- Girls opt for shorter courses – Science courses take too long (in Burundi it takes five years to complete a degree in Agriculture)
- Early marriage affects retention in primary and secondary schools and massively impedes the educational progress of girls, whether it occurs to lighten a family's economic burden or to secure a daughter's future. Eighty two million girls in developing countries who are now between the ages of 10 and 17 will be married before their 18th birthday (Global Gender Gap report 2009). In Uganda more than half (55%) of women aged 25 – 49 years were married by age of 18. By age 20, almost three quarters (74) of women have married compared to one quarter (26%) of men 25 – 54 years (UDHS, 2006).
- High level of teenage pregnancy in many countries. One-quarter to one-half of girls in developing countries become mothers before 18. This may lead to high dropout rates.
- About 75% of all HIV infections in sub-Saharan Africa are among people of ages 15 to 24 are young women. In the absence of a vaccine protecting children and young people against HIV/AIDS, education is the best defense against the disease. The more educated and skilled, the more likely they are to protect themselves from infection.
- The boy child is often given preference to go to school in case of limited resources

5.0 GENDER ISSUES WITHIN AFRICAN AGRICULTURAL UNIVERSITIES

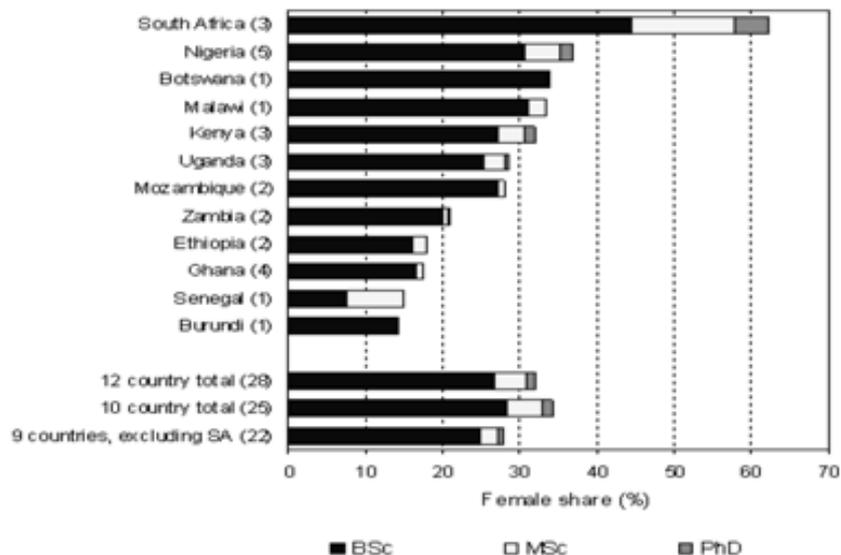
Other than the gender issues in the wider society and pre-university levels of education, African universities are plagued with a range of issues which impede women's access, retention, and performance in agricultural education. Gender issues affecting students have to do with the gender disparity in enrolment, negative perceptions about agriculture as a career option, the learning environment including culture and the curriculum. For female staff, issues revolve around their minority status in the faculties of agriculture in general but more especially in what are considered masculine disciplines, higher positions, and leadership. The following sections address these issues.

5.1 Gender disparity in enrolment in agricultural training courses

Trends in women's enrolment in agricultural higher education indicate improvement over time in sub-Saharan Africa (Beintema 2006). However, Forsythe et al (2010)

found that despite the initiatives introduced in agricultural higher education institutions in three of the four case study countries (Tanzania, Kenya and Uganda), the number of women as a proportion of the total enrolment in these programmes has not increased in the last five to six years, despite an increase in the absolute number. Findings from universities in the Eastern, Central and southern African (ECSA) region reveal that overall one in every four undergraduate agricultural students is a female. The disparity becomes even more evident at the postgraduate level (Table 2) where only 16% of the graduate students are women (RUFORUM, 2010). Similar gender disparities in enrolment in agricultural courses in higher education were identified by a study of 12 sub-Saharan African countries undertaken by the Agricultural Science and Technology Indicators (ASTI) initiative (see figure 1 below). On average, about one third of the students enrolled in agricultural sciences in 2007 were female, which is somewhat higher than the average share in table above—this is because the ASTI sample included three agricultural faculties in South Africa where female student shares are relatively higher than in other countries. Women were found to be more likely to take social sciences, humanities, services and health-related courses (UNESCO, 2010). The ASTI study showed that most women were enrolled in a BSc (83 per cent), whereas only 13% were enrolled in MSc and 4% in PhD degree level training at agricultural higher education. This distribution was comparable to those of male students, indicating that many faculties and school still have lack or have limited PhD and MSc programs (Beintema and Di Marcantonio, 2010).

Figure 1: Share of female student enrolment in agricultural higher education, 2007¹⁵



Source: ASTI-AWARD datasets as presented in Beintema and Di Marcantonio (2010).

¹⁵The number of higher education agencies in each country is shown in parentheses. 28 agencies were surveyed in twelve countries in Sub-Saharan Africa: South Africa, Nigeria, Botswana, Malawi, Kenya, Uganda, Mozambique, Zambia, Ethiopia, Ghana, Senegal and Burundi. The ten country total excludes Burundi and Ethiopia.

Table 2: Distribution of Male and Female Students enrolments in sample universities (RUFORUM, 2010).

University	Percent of students enrolled in the academic year							
	2009/10		2008/09		2007/08		2006/07	
	Male	Female	Male	Female	Male	Female	Male	Female
Under graduate level								
Makerere University (Faculty of Agriculture)	67	33	70	30	69	31	78	22
Mekele University (College of Dry Land Agriculture)	69	31	68	32	89	11	47	53
University of Swaziland	57	43	59	41	62	38	63	37
Hamaralaya University College of Agriculture and Environmental Sciences	80	20	84	16	81	19	80	20
Botswana College of Agriculture	67	33	66	34	64	36	63	37
Sokoine University of Agriculture (SUA)			73	27	70	30	74	26
National University of Burundi	84	16						
Eduardo Modlane ¹³	82	18	71	29				
Bunda College of Agriculture			70	30	73	27	68	32
Overall undergraduate level	72	28	70	30	73	27	68	32
Graduate Level								
Makerere University (Faculty of Agriculture)	78	22	74	26	46	54	64	36
Mekele University (College of Dry Land Agriculture)	70	30	61	39	78	22	93	7
University of Swaziland	72	28	79	21	81	19	75	25
Hamaralaya University College of Agriculture and Environmental Sciences	90	10	88	12	89	11	80	20
University of Zimbabwe	52	48	53	47	70	30	61	39
Botswana College of Agriculture	68	32	58	42				
Sokoine University of Agriculture (SUA)			71	29				
Eduardo Modlane ¹⁴	71	29						
Overall Graduate Level	72	28	69	31	73	27	75	25

¹³ Figures for students in the Departments of Silviculture, Agronomy and Forestry only

¹⁴ Figures provided for three courses: MSc Plant Protection (1 female, 6 male); MSc Natural Resources Management (4 female, 3 male); and MSc Rural Development (16 female, 5male)

This pattern appears to be a universal phenomenon around the world, though the proportion of the disparity across countries can and does differ significantly (Teferra and Altbach, 2004). The number of women in higher agricultural education as compared to men is lowest in precisely those regions of the world where women constitute the majority of food producers, which also has a bearing on agricultural planning and policy in all regions (Karl et al, 1997).

These trends mean that although universities have shown good practice in a range of areas aimed at encouraging women into science and agriculture such as lower entry points for girls, targeted scholarships, remedial science pre-entry programs¹⁶, gender parity is yet to be achieved (RUFORUM, 2010). According to RUFORUM (2010) the limited numbers of girls who meet requirements for admission coupled with fewer numbers of girls undertaking science subjects are some of the key factors curtailing attainment of gender parity. High entry requirements set by some universities also lock out students notably girls and those from poor families or disadvantaged regions. For instance the admission to tertiary institutions in Kenya requires a minimum of C+ however Egerton requires B+ and this locks out many. A woman having to break career to get married or attend to her children is another key limiting factor for their undertaking of postgraduate degrees which may require travelling far from home. Women have to make a choice between pursuing higher degrees and establishing a stable family. Of the women who reach HEIs in Africa, it is commonly expected that they marry immediately on completion of their first degrees. Male students are not expected to marry at that age thus male students are able to apply for graduate training without encumbrance of family responsibility and children (AAU, 2006). For instance among Ugandans with at least secondary education, women marry four years younger (median age 20.6 years for women aged 25-49 years) compared to men aged 25-54 years whose median age at first marriage stands at 24.4 years (UDHS, 2006)¹⁷.

It is noteworthy that women's enrolment in private universities is generally higher compared to public universities such as in Kenya, where Ngome (2003) reported that gender parity was achieved due to lower entry requirements and more emphasis on courses in arts, social sciences, business administration, accounting and computer science (in Assié-Lumumba 2006). However, the

¹⁶ *Makerere University, Uganda* from 1990 to 2008 implemented affirmative action in favor of female applicants through accreditation of 1.5 points. This effort increased enrollment of female students in science programs from 17% in 1989/1990 to 33% in 2008/2009 (Makerere Gender Equality Policy, 2009).

The Kenya, *Joint Admissions Board (JAB)* accredits two points to female students and one point to students from disadvantaged areas for admission to undergraduate programs (UoN, 2008). In 2008, this effort had resulted in 34% enrollment of female students to undergraduate programmes (UoN, 2008). Gender mainstreaming efforts at Egerton University have seen enrollment of female students increase from 26% in 1996 to 42% in 2009. However it was noted that there are fewer girls in sciences- less than 37%.

Sokoine University of Agriculture (SUA) in Tanzania has a Pre-Entry Programme (PEP). While initially designed to provide access to girls that had not attained the required academic points to science courses, it also included male students in 2008. The programme is conducted as a six weeks remedial course. Those that pass gain entry to the University.

¹⁷ Uganda Demographic and Health Survey (UDHS) 2006.

drawback here is that public universities often enjoy higher capacity and facilities due to their higher access to state resources. Besides, women from poor backgrounds cannot afford private universities. Therefore, in cases where initial enrolment rates are very low among school-age girls, even parity in the private education institutions cannot statistically close the initial gender gap (Assié-Lumumba, 2006).

5.2 Effect of “preconceived” negative perceptions of agriculture

Reasons for low enrolment in agriculture are related to the negative perceptions of agriculture in many Sub Saharan Africa countries, which have also prevented uptake by both men and women, but women especially. This is because perceptions of agriculture are associated with poverty, drudgery and poor working conditions (Acker et al, 1998; Forsythe et al, 2010; RUFORUM, 2010). A study conducted by Forsythe et al (2010) in four sub Saharan African countries found that there was a perception that agriculture was not a viable career option. Male students reported that men often feel that agriculture is predominantly a feminine and low-status occupation, whereas female students reported that women were intimidated by their lack of experience with complex technology and machinery involved in more large-scale agriculture, which is perceived as more masculine. There is also a perception that agricultural careers involve fieldwork in remote communities, which conflict with perceptions that women should not travel in order to be close to home to facilitate reproductive roles. Female students in agriculture also experience negative attitudes from other students, teachers and family who question their choice of field, which makes it difficult for them to feel confident in their studies.

“Farming and poverty, low productivity and subsistence has a female face. Agribusiness and management have a male face” (male, Research Scientist, Rwanda – excerpt from Forsythe et al, 2010).

“My fellow students would tell me ‘how will you handle/restrain animals given your size?’ I would tell them that I will manage. I will get people to restrain the animal so that I can do to it what I am supposed to” (female student – excerpt from Forsythe et al 2010).

The negative and highly gendered perceptions of agriculture are challenged once students enrol in agricultural courses. The Forsythe et al (2010) study found that students, both men and women, discovered a wide-range of possibilities in agricultural careers, from genetic research, fieldwork and academics. Many female students describe that they accidentally ended up in agriculture, through failing a course, family pressure or lack of alternative choices (Acker et al, 1998; RUFORUM, 2010). However, their perceptions changed in a positive way once they were in the degree programme. Some students mentioned that they had never known that the field of agriculture was so diverse, remunerative or high profile. Women in particular mentioned that they gained knowledge in technology and genetics which can offer lucrative careers. The lack of awareness of these areas of work in agriculture may reveal that women have limited exposure to these areas because of gender stereotypes that classify this area for men (Forsythe et al, 2010).

Once in higher learning institutions, women are more likely to select courses within agriculture degrees that are perceived to correspond to their gender roles and are more socially-orientated, similar to the trends described at the secondary school level (Tables 3 and 4). For instance, at Sokoine University of Agriculture, more women take Home Economics and Human Nutrition (78 per cent) and Food Science and Technology (47 per cent), which may reflect perceived responsibilities of women in family wellbeing. In contrast, men at Sokoine University are more likely to take agricultural engineering (95 per cent) or Agronomy (89 per cent), reflecting men's preference in courses with greater emphasis on technology or fieldwork. However, there are also signs of change, where women are taking up courses that challenge traditional gender roles. For example, at Sokoine there are high numbers of women in Environmental Science Management (36 per cent), which was a similar level to the Soil and Environmental Management course at the National University of Rwanda (28 per cent women). Female students also showed interest in laboratory and genetic research (Forsythe et al, 2010).

Table 3: Enrolment by sex at National University of Rwanda Faculty of Agriculture, 2010.

	Female students		Male students		Total number
	Number	(%)	Number	(%)	
Agribusiness	84	30	196	70	280
Animal production	60	40	91	60	151
Crop production and horticulture	71	27	189	73	260
Soil and environmental management	66	28	167	72	233
Faculty of Agriculture	281	30	643	70	924

Source: Forsythe et al (2010).

"In the first year we do basic science courses and we don't really know what we will become. But in the second year we had a lecturer in genetics and also visited the Kenya Agricultural Research Institute. This was a turning point for me. Now I want to master in breeding" (female, undergraduate student, Kenya – excerpt from Forsythe et al 2010).

Universities such as Sokoine University of Agriculture in Tanzania, Makerere University in Uganda, Egerton University in Kenya have taken fruitful steps to market agriculture in secondary schools through sensitization of students on the available options and potential careers in agriculture and other science fields. However, the issue of negative perception about agriculture among students and society is yet to be completely dispelled (RUFORUM, 2010; Forsythe et al, 2010).

Table 4: Course Enrolment by sex at Sokoine University of Agriculture, 2009-2010.

	Female students (%)	Male students (%)	Total number
BSc Agriculture	11	89	179
BSc Forestry	15	85	179
BSc Home Economics and Human Nutrition	78	22	169
Bachelor of Veterinary Medicine	6	94	162
BSc Food Science and Technology	47	53	130
BSc Agriculture Engineering	5	95	82
BSc Horticulture	17	83	59
BSc Animal Science	19	81	171
BSc Agronomy	11	89	99
BSc Agriculture Education and Extension	24	76	280
BSc Agricultural Economics and Agribusiness	24	76	427
BSc Wildlife Management	21	79	209
BSc Environmental Science Management	36	64	157
BSc Biotechnology and Laboratory Science	18	82	175
BSc Aquaculture	28	72	92
BA Rural Development	33	67	552
BSc Range Management	14	86	57
BSc Tourism Management	51	49	202
BSc Informatics	13	87	99
BSc Education	22	78	392
TOTAL	26	74	3872

Source: Forsythe et al (2010).

5.3 Content and experience of agricultural learning

Formal and informal delivery of the curriculum in agricultural higher education, in terms of course content and the learning experience often reveals evidence of gender bias that can affect gender-specific attrition and retention (Acker et al, 1998; Assié-Lumumba, 2006; RUFORUM, 2010). Classroom practices, course materials and course content reflect the underlying values of institutions and wider society incorporating gender biases and stereotypes that can hinder the gender-sensitive learning.

In Nigeria, the agricultural curriculum was found to have low gender sensitivity, due largely to practical reasons, including the bureaucratic functioning of the university's curriculum committee, funding constraints and inadequate teaching resources. While students preferred participatory techniques and life application skills, agriculture courses reflected more "mainstream" disciplinary areas, and classroom observations showed minimal references to female scholars and affirmation of their knowledge, thus discounting women's interests, experiences and scholarship (Mama, 1996).

Forsythe et al (2010) found that tasks assigned during practical field experience for students were also highly gendered. Some female students reported that they received less 'hands-on' experience than men and that they are excluded from some field activities, for example during surveys or animal science practicals.

This was related to perceptions and gender stereotypes of women not possessing the physical strength or wherewithal to carry out practical tasks, such as inseminating animals or castration. For example in Kenya, female students at Egerton university in Kenya and Makerere University in Uganda reported that they were often asked to take notes and record findings during such field activities, instead of participating in the experiment or the activity itself. The study found that this was a particular disadvantage for girls who required practical experience as they were often not exposed to these activities whereas male students may have undertaken them during their childhood and helping with the farm.

"We went to slaughter and castrate animals in a practical. Now this requires muscular strength. All I did was to take the records while the boys did all the other tasks... It is the lecturer who assigned the girls the lighter task of recording" (female, undergraduate student, Uganda – excerpt from Forsythe et al 2010).

The inclusion of gender content in agricultural courses to improve students skills in gender sensitivity is beginning to take root, which could not only improve capacity of graduates to address gender issues but can also make the course content more relevant and applicable to the lives and experiences of female students (Martineau, 1997). RUFORUM (2010) found that higher education institutions did have some course units with elements of gender analysis; however, they were mostly on an elective basis. RUFORUM (2010) also found that in graduate level courses there was less gender content, but there are calls among institutions such as Eduardo Mondlane in Mozambique and the Botswana College of Agriculture to integrate gender into the curriculum. However, Makerere University in Uganda has undertaken extensive gender mainstreaming initiatives in its agricultural curriculum (Forsythe, et al, 2010).

5.4 The culture within universities

There are cultures which make universities unfriendly to women and students from disadvantaged regions. The expression of gender stereotypes and biases are often reflected in institutional behaviour, attitudes and language used by students and staff, which can marginalise women in agricultural education (Acker et al, 1998; Assié-Lumumba, 2006). Most research on institutional culture and treatment of women refers to the sexual objectification and harassment of female students and staff which hinders the ability of women to participate and progress through their studies and careers respectively.

Forsythe et al (2010) found instances where female staff experienced gender based stereotypes and biases during promotion procedures. Female students mentioned that male lectures would sometimes make inappropriate comments during lectures which would embarrass female students. Many studies (see for example RUFORUM (2010)) have also reported the prevalence of sexual transactions for marks, where both lecturers and students complained of harassment, or where students feared approaching male lecturers for fear of accusations of seeking sexual transactions for marks (Forsythe et al, 2010). South African higher learning institutions have made formidable attempts to address sexual harassment, but it is often a long process. Citing a number of

studies, Assié-Lumumba (2006) found that sexual harassment policies were often significantly delayed in ratification and the largely male authorities in higher learning institutions lacked enthusiasm and motivation to undertake actions. The results of policy implementation were also not often seen for years afterwards.

There is also evidence of higher learning institutions displaying intolerant attitudes towards pregnant students or female students who are considered to dress provocatively (Forsythe et al, 2010; Acker et al, 1998; Odejid et al, 2006). Odejid et al (2006) argues that this 'masculine culture' in higher education creates an insecure environment for women's participation in university life. Without policies and accountability measures, these attitudes are normalised in institutions making it difficult to challenge these behaviours.

"I sense an attitude of intolerance among some staff for certain types of students like girls who get pregnant or who dress indecently. Lecturers need to know that they will encounter a variety of students" (female student – excerpt from Forsythe et al 2010).

5.5. The learning environment

No space is gender neutral, including the learning environment that can both prohibit or enable the participation of men and women in various ways. The male-dominated space of the learning environment in agricultural education, resulting from lower enrolment of women, can limit the participation of women in classroom discussions and lectures resulting in disempowerment (Odejid et al, 2006). However, Forsythe et al (2010) found that if students and teachers are sensitive to the situation of women in their minority status and provide the appropriate space and encouragement for women, female students can feel privileged and even more respected as a minority in their courses.

It is also important to take the practical needs of women into account in the learning environment to improve levels of participation and reduce attrition among female students. It is often forgotten that at least once a month, any female student in the reproductive age group will have her menstruation, a situation requiring ample facilities for sanitation and personal hygiene. Studies have shown that, at primary school level, one in ten female students misses school or classes due to the lack of facilities for taking care of their personal hygiene during menstruation (UNICEF 2005). Furthermore, the lack of, and more specifically cost of sanitary materials, impedes the brightest student from attending class during those crucial lessons losing up to two weeks/term in a country like Kenya. Fear of soiling ones clothes in public, and not to mention the cramps, pains, migraine that go with the menstruation for some of the women, is just the tip of the iceberg for many of these easily dismissed "real issues". Providing health care services on campus with medicines that actually work against "period pains", migraine and nausea would greatly facilitate the learning process of many girls/women. If private companies producing sanitary products or medicines could sponsor universities with a "start package" specially packed with women in mind, at the beginning of each term, this would contribute significantly towards keeping girls/women in school. Many companies in the North use this as an advertising gimmick that has fulfilled more than one purpose and contributed towards human capacity building.

Another practical need of women are childcare and support services for pregnant students which if not available can prevent women in particular from progressing and completing their education (Acker et al, 1998; Forsythe et al, 2010; RUFORUM, 2010). Female students with childcare responsibilities can often feel marginalised due to the lack of support and understanding from lecturers and the lack of facilities such as medical care (Forsythe et al, 2010; RUFORUM, 2010). The poor treatment of pregnant women and students with childcare responsibilities largely reflects negative attitudes and stereotypes of women, often resulting in women dropping out of studies (Martineau, 1997). Pregnancy is often considered a 'problem' by institutions, who consider that responsibility lies solely on female students to restrain themselves from sexual conduct, or indeed that they needed to be supervised in order to be 'responsible' (Forsythe et al, 2010; RUFORUM, 2010), without similar treatment for men.

"Expectant mothers are not considered to be students. They are even supposed to reside outside the campus for the last the months of their pregnancy and they don't qualify for medical support from the university facility. There is a negative attitude about them by students and staff. The message is you did something wrong and you have to pay for it" (student – excerpt from Forsythe et al 2010).

Student mother's clubs and nursery school provision are being developed in universities, such as at Egerton University in Kenya, to provide resources and support for women with childcare responsibilities for staff and students. Support networks or gender clubs for female students and mothers were found in the universities visited in Rwanda and Kenya. While these groups are positive about the support they provide, they experience a number of challenges which limit their effectiveness and the extent to which they can assist students. Some of the challenges reported were lack of funding, training and support from management (Forsythe et al 2010).

In addition, the terms of study are often unattractive to women, which constrains women from combining studies with reproductive and caregiving roles. Flexible women friendly modes of delivery such as distance learning and evening classes are not often offered (RUFORUM, 2010). Evening classes at Sokoine University, for example, have been taken up by over half of female scholarship recipients. The lack of suitable accommodation provided by higher learning institutions is another issue for both men and women, but for women in particular. Many universities do not provide secure environments for post graduate students. Accommodation is often offered only to first year undergraduates, where other students must take up accommodation off-campus which raises issues around safety and costs of transportation. There is also a lack of facilities for students with families, even for postgraduate students from outside the countries they are studying in (RUFORUM, 2010).

Some universities have established a gender focal point person to establish oversight and responsibility for gender issues at the department level. However, in many cases, gender focal points often did not have a background or experience in gender and in some cases, there were no formal application or hiring procedures.

This often resulted in recruitment of either unqualified or uninterested people in these positions (Forsythe et al 2010; RUFORUM, 2010).

5.6 Gender issues affecting female staff in Faculties of Agriculture

Women constitute a small minority of the staff in agricultural faculties in African universities especially in higher positions compared to men (Table 5). The career progression for women is much slower than that of men. RUFORUM (2010) found that only 20% of the academic staff in agriculture faculties of 11 member universities are women while 80% are men. A study by Sasakawa Africa Fund Extension Education (SAFE) also found that the proportion of women hired as academic staff in their partner universities ranged from as low as 6.1% of academic staff for University of Addis Ababa in Ethiopia to 12% for University of Cheikh Anta Diop in Senegal¹⁸. Nigeria's national data indicate only 12.4% of academic staff are women, although the University of Ibadan has 24.8% women academic staff, similar to that of the University of Ghana's 24% women academics (Bunyi, 2003).

Within the faculties, higher numbers of female staff tend to be found in departments teaching courses that have traditionally been dominated by women, such as food science and technology. A comparison of numbers of female staff in the faculties of Agriculture, Education, Health Sciences, Institute of Distance Learning (IDE) and Social Sciences in the University of Swaziland (UNISWA), show that Science (14%) and Agriculture (27%) faculties have the least representation of women compared to the Health Sciences (76%), and IDE (75%) faculties (Dhlamini, 2009).

Within faculties and departments, women tend to hold more junior positions. There is a relatively higher proportion of female academic staff in the early and middle careers (Assistant lecturer and Lecturer) compared to the proportions of male staff. However, the situation is reversed for the senior lecturer, associate and full professor levels. With the exception of the SUA and Faculty of Agriculture-UON where there are four female professors, there is not more than one female full professor in the other faculties captured in this study. There is no female professor at Haramaya, UNISWA, and Mekele College of Dry Land Agriculture. On average, 17% of PhD holders were women while 83% were men and three in every four academic staff with a master's degree were men.

Mobility through the ranks is dependent on academic or professional credentials. The common criteria for promotion are academic qualifications (a tenure track promotion is automatic upon obtaining a higher degree), academic merit (assessed by the number of publications), research, and supervision of graduate students, contribution at seminars / conferences, workshops and quality of teaching. Though there is no formal discrimination of women in career progression, institutional factors as well as external factors (marriage, domestic responsibilities and culture) limit their progression. The external factors limit academic women's

¹⁸ Achieving Gender Balance in Tertiary Institutions and Colleges in Africa
(With reference to SAFE partner institutions) SAFE 2010.

Table 5: Distribution of staff by gender in Focus Faculties in Eleven RUFORUM Member Universities.

University	Number and percentage of staff by gender				
	Female		Male		Total number
	Number	Percent	Number	Percent	
Botswana college of Agriculture	37	24	115	76	152
Bunda College of Agriculture ¹⁹	18	28	46	72	64
Eduardo Modlane	16	25	49	75	65
Mekele University	14	11	112	89	126
National University of Burundi	4	20	16	80	20
University of Nairobi ²⁰	18	23	61	77	79
University of Zimbabwe	13	27	36	73	49
University of Swaziland	15	28	39	72	54
Makerere University Faculty of Agriculture	30	29	72	71	102
Haramaya University College of Agriculture and Environmental Sciences	22	13	153	87	175
Sokoine University of Agriculture	84	18	372	82	456
Ahmadu Bello Zaria ²¹	2	13	13	87	15
IPR/IFRA ²²	4	22	14	78	18
Bayero ²³	2	11	17	89	19
Total	279	20	1115	80	1394

Source: RUFORUM, 2010

¹⁹ Staff situation in the Academic year 2008/2009, including staff on study leave, secondment to government and on leave of absence.

²⁰ Staff figures for the departments of Agricultural Economics, Land Resource Management and Technology, Food Science and Technology and Plant Science in 2008

²¹ Figures in Department of Agricultural Extension, Source SAFE 2010.

²² Figures in Department of Agricultural Extension, Source SAFE 2010.

²³ Figures in Department of Agricultural Extension, Source SAFE 2010.

participation in research, culminating into fewer publications and consequently loss of opportunities to participate in Continuous Professional Skills Development (CPD) events where participation is at times secured and approved upon evidence of a paper to be presented. Findings in four RUFORUM member universities (Table 6) reveal that fewer female staff (23%) were Principal Investigators on research projects compared with men (77%).

Another issue is that in most universities, there are few women in leadership positions (Table 7). Women were found to occupy only 17% of the management positions in faculties of Agriculture while 83% were men (RUFORUM, 2010). Some of the factors that explain this gap include the lack of women with relevant qualifications especially in fields that have historically been dominated by men, and reluctance by some qualified women to take up administrative responsibility due to the challenges of balancing career and care giving responsibilities. In addition, women in leadership positions sometimes feel isolated and colleagues

Table 6: Distribution of staff by involvement in research.

University	Role	Number of staff participating by academic year							
		2009/10		2008/09		2007/08		2006/07	
		Men	Women	Men	Women	Men	Women	Men	Women
Mekele university (College of Dry land agriculture)	Principal Investigators	18	3	17	2	15	1	21	1
	Team members	35	5	33	3	14	10	25	2
University of Swaziland	Principal Investigators	2	2	6	1	11	1	15	1
	Team members	3	4	13	1	17	1	21	3
Haramaya University college of Agriculture & environmental sciences	Principal Investigators	45	11	36	9	24	4	27	2
	Team members	78	15	64	10	49	5	56	5
Makerere University Faculty of Agriculture	Principal Investigators	29	12						
	Principal Investigators	94	28	59	12	50	6	63	4
Total	Team members	116	24	110	14	80	16	102	10

Source Faculty Records RUFORUM member universities(RUFORUM, 2010).

Table 7: Distribution of Staff in Leadership Positions in Colleges and Faculties of Agriculture in Four Universities.

University	Sex	Positions and number of Staff				Total	
		Principals	Deans	Associate Deans	Heads of Department	No	%
Botswana College of Agriculture	F	0	0	0	1	1	12.5
	M	1	1	0	5	7	87.5
Mekele University College of Dry Land Agriculture	F	0	0	0	0	0	0.0
	M	1	1	1	4	7	100.0
National University of Burundi	F	0	0	1	1	2	33.3
	M	0	1	0	3	4	66.7
UON College of Agriculture and Veterinary Science ¹ Faculty of Agriculture ²⁵	F	1	0	0	2	3	37.5
	M	0	1	1	3	5	62.5
Haramayara University: College of agriculture & environmental sciences	F	0	0	0	0	0	0
	M	0	1	1	5	7	100
University of Swaziland (UNISWA)	F	0	0	0	2	2	25.0
	M	0	1	0	5	6	75.0
Makerere University (Faculty of agriculture)	F	0	0	1	0	1	10.0
	M	0	1	1	7	9	90.0

Source: RUFORUM, 2010.

²⁵Figures for 2008/2009

Findings from RUFORUM (2010) identified the following factors limiting women's career progression:

- Impact of multiple responsibilities (teaching, research and family obligations) and the difficulty in balancing all these responsibilities.
- Women who chose to devote their earlier years to family often feel later on that the opportunity to advance in their career through further training has passed
- University/College policies that senior lecturer positions shall only apply to those with PhDs, yet most women lecturers do not have this qualification.
- Limited opportunities for female staff to network
- Absence of support structures for women in leadership.
- Absence of visible role models and mentors. The relative lack of role models and the relative invisibility of highly successful career women who are balancing successfully their home and careers seem to make it difficult to convince more young women that it is possible to be a professional and a wife/mother as well.
- Institutional challenges – the challenges women face in balancing their roles is not appreciated.
- The five to seven year duration of some PhD programs is a serious deterrent to women considering their family commitments
- "Glass ceiling", some women get contented with their first degree or masters and may need a push for them to apply for higher degrees.

(male and female) tend to challenge rather than support them. As women go higher in the career path, male colleagues turn more unwilling to support them which serves as an obstacle for women's ascending to top positions²⁴.

The absence of women in senior positions means that they are largely absent from discussions where issues pertaining to higher education are deliberated. Seminars, workshops and other fora involving senior officials remain a domain for men who make use of the opportunities for developing capacities through exchange of experiences and networking.

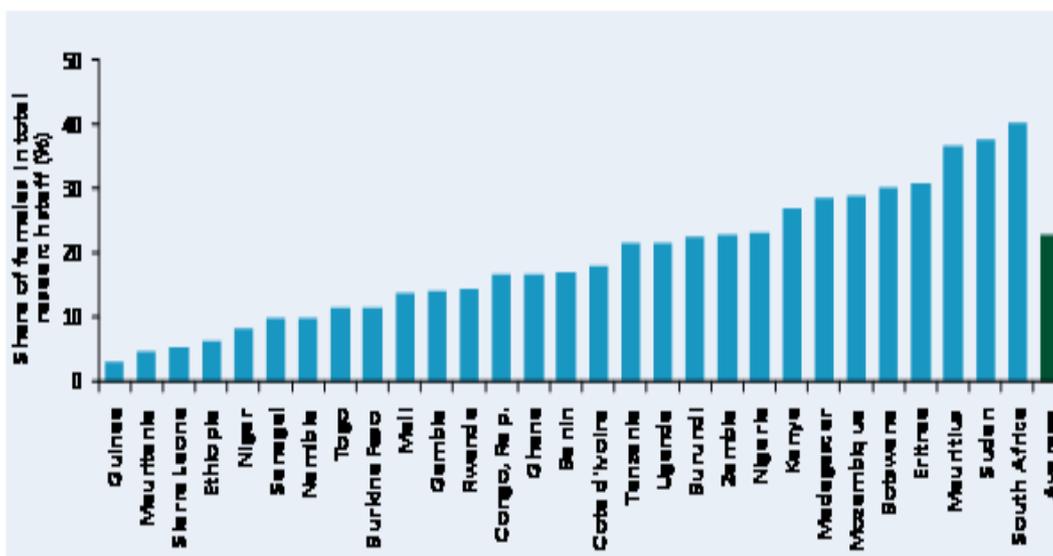
5.7 Women in agricultural research and technology development

The number of female scientists working in science and technology (S&T) research has increased substantially in recent decades, but the participation of women remains low in most countries; this is true for sub Saharan Africa as well. Forthcoming data analysis by the Agricultural S&T Indicators (ASTI) initiative show that for a sample of 29 African countries, an average of 23% of the agricultural researchers (covering the government, higher-education, and nonprofit sectors) are female (figure 2). In relative terms, the share of women in total professional staff increased from 18% in 2000/01 to 23% in 2008 (Beintema and

²⁴ Teresa Carvalho, Özlem Özkanl and Maria de Lourdes Machado 2009, Gender Inequalities in senior management: A comparative study from Portugal and Turkey

Stads forthcoming). Unsurprisingly, large variations exist across countries. Female participation in agricultural research and higher education was particularly high in South Africa (40%), Sudan (37%), Mauritius (37%), Eritrea (31%), and Botswana (30%). In contrast, only a small proportion of the agricultural professional staff were women in Guinea (3%), Mauritania (5%), Sierra Leone (5%), Ethiopia (6%), and Niger (8%). Female professional staff were also relatively higher educated in Kenya, Madagascar, and Mozambique where more than one fourth of the total held PhD degrees.

Figure 2: The share of women in total agricultural research staff at government and higher education agencies, 2008.

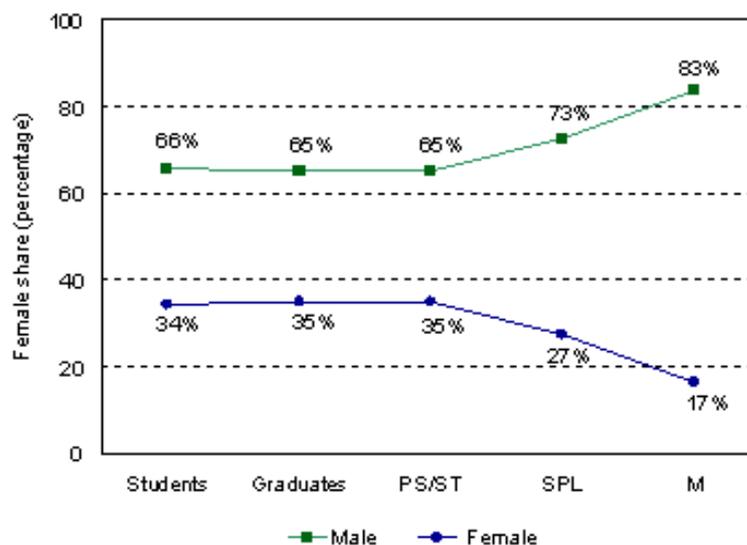


The increase of the number of women, as well as men, that enter African agricultural research and higher education are mostly young staff with relatively lower level of degrees and at the beginning of the career ladder. For a 15-country sample, more than one half of the female professional staff were younger than 41 years compared to 42% of the total male professional staff. Comparably, an average of 31% of total female staff and 27% of total male staff held BSc degrees. These 15-country averages, again, mask a wide variation across countries (see Beintema and Di Marcantonio 2010). The share of women disproportionately declines on the higher rungs of the career ladder (figure 3). Only 14% of the management positions were held by women, which is considerably lower than the overall share of female professional staff employed in agriculture. Women are, therefore, less represented at in high-level research, management and decision making positions compared with their male colleagues. As a result, women have less influence in policy-and decision making processes, which can further result in biased decision making and priority-setting.

5.8 Challenges with institutionalization of gender mainstreaming

African universities are at varying levels of establishing institutional frameworks within which action on gender can be undertaken at all levels. Presence of a

Figure 3: Gender-disaggregated shares of tertiary students and professional staff in agricultural sciences in a 10-country sample, 2007/08.



Sources: ASTI datasets as presented in Beintema and Stads (2011).

gender policy coupled with structures and resources for implementation signals commitment to taking steps in gender planning for the institution's sustenance, promotion of gender justice, the management and prevention of gender violence, discrimination and injustice (AAU, 2006). The University of Botswana, SUA, EU, the UON, Egerton university have developed gender policies. Makerere University gender policy was still a draft although the university has a fully fledged Gender Mainstreaming Division under the Academic Registrar's office. Others such as UEM, have adhoc gender mainstreaming strategies while the National University of Burundi did not report having a gender policy (RUFORUM, 2010; Forsythe et al, 2010).

It must be noted that the presence of a policy is not enough to ensure its implementation at all levels of the institution. Effective institutionalization and implementation of the gender policies requires a robust combination of political will, technical expertise, resources, realistic timeframe within which to achieve measurable benchmarks, specific persons and organs for implementation and regular monitoring (AAU, 2006). RUFORUM (2010) found that even for the universities that had gender policies, the extent of their implementation varied (Box 4). The key challenges to the implementation of the gender policies and strategies included:

- A lack of human resources (both in terms of number and with relevant technical skills) to spear head implementation of the gender strategies. In most cases those charged with gender mainstreaming efforts undertake the task in addition to their academic, research and sometimes management responsibilities.
- Lack of specific office space for the gender mainstreaming unit which makes coordination and administration difficult.
- Inadequate funds to implement agreed work plans.

- Absence of clear and measurable action plans.
- Resistance from some senior staff (women inclusive).

Box 4: Universities' Efforts to Institutionalize Gender Mainstreaming

University of Nairobi

The UoN gender policy, completed in June 2008 outlines clear structures and organs for implementing Gender Mainstreaming. They include a University wide structure, college based gender committees and campus-based gender units or focal points that will facilitate and coordinate the implementation of the policy. However some of staff consulted were not aware of the existence of the policy or were fuzzy about its specifics, implying that the extent of implementation of the policy- especially at the college levels is still very limited.

Botswana College of Agriculture

The University of Botswana has a gender policy. However BCA was yet to develop clear guidelines and action plan to align its intervention with the policy. The College has a gender focal person and has set up a committee for gender. However the committee is still largely inactive as they have not had any meeting to set clear objectives or plans of action.

Eduardo Mondlane University

In July 2009, Eduardo Mondlane University set up a Centre for Gender (Centro de Coordenacao dos Assuntos do Genero) and appointed a centre director and deputy. Gender focal persons have been designated at the faculty level. At the faculty level the gender focal persons have set up three person committees that comprise of gender focal persons for administrative staff, academic staff; and students, whose functions is to present emerging gender issues to the faculty gender focal persons who in turn present to the Centre.

Sokoine University of Agriculture

The University published a gender policy in 2002 and updated it in 2007. The University has a Gender Policy Implementation Committee (GPIC) which reports to the Senate and is responsible for monitoring all activities that relate to gender within the University, working with other relevant institutions in SUA to ensure gender dis-aggregated data are collected and used in reporting, lead and coordinate gender related programmes, support development gender sensitive infrastructure in the University through proposal development and to review the policy regularly. Some of SUA's gender programs include:

- Gender capacity development for SUA staff
- Implementation of a pre-entry science program for female students
- Sensitizing girls to join SUA degree programmes
- Sensitizing secondary school girls to opt for natural science subjects
- Sensitization workshop on gender issues to secondary school teachers
- Mainstreaming gender in training, research and outreach activities
- Gender sensitization workshops/seminars for SUA community
- Introduction of undergraduate and postgraduate full courses on gender

6.0 CONCLUSION

There is concrete empirical evidence of gender issues in African universities and the wider society which have contributed to the gender gap in access to education, retention, and performance. Women are grossly underrepresented at all levels of education with the gap becoming wider at the higher levels particularly in science subjects including agriculture. Factors that hinder gender balance in educational opportunity range from the broader political context, the characteristics of the community, the family, and the potential/actual students, teachers' qualifications, the curriculum, and the institutional climate among others (Assie-Lumumba, 2006). Effective interventions must therefore of necessity be multifaceted targeting all these dimensions of society. The policy response from higher education agricultural institutions varies across sub Saharan Africa. Some have criticised the lack of action by institutions to implement progressive policies and address gender issues in agriculture (Acker et al 1998). Overall, universities in some countries such as Uganda, Tanzania, Kenya and South Africa have taken affirmative action measures, bridging programmes and female targeted scholarships. However this is not widespread throughout Sub Saharan Africa.

Various improvements to female enrolment have been made in various Sub-Saharan African countries, including Ethiopia, Tanzania, Zimbabwe, Malawi and Uganda, which have lowered the grade point average or awarded additional points required for admission for female candidates (Teferra and Altbach, 2004). The University of Botswana, SUA, Egerton University and the University of Nairobi have developed gender policies (RUFORUM, 2010). While some of these initiatives have shown encouraging results, many have not been effective in significantly increasing the number of women in higher education in agriculture or the sciences (Assié-Lumumba 2006, Forsythe et al 2010; Teferra and Altbach 2004).

The small number of initiatives undertaken to address these issues are often related to policy makers emphasis on what is considered to be more 'volatile social differences such as ethnicity or religion, and there is also an apprehension of affirmative action policies which are perceived to conflict with principles of merit and lead to additional gender stereotyping (Odejide et al, 2006; Forsythe et al, 2010). Therefore, generally even for universities where some gender interventions exist, they tend to be narrow in focus addressing symptoms rather than the fundamental root causes of gender based disadvantage for women. In many instances, gender initiatives are short term projects largely hinging on outside donor funding and the initiative of a few individuals within the institutions raising questions about institutional ownership and sustainability. Genuine gender mainstreaming with a potential to transform African society is lacking. If Africa is to realise the development and gender parity targets set in global declarations such as the MDGs and NEPAD, much more needs to be done. We need the right policies in place, as well as commitment and leadership at the highest level. It is only then that ample resources will be committed to the cause of gender equality for a long enough period to result in transformation of society in general and higher education in particular.

7.0 RECOMMENDATIONS

The analysis in this paper shows that the barriers to gender balance in educational opportunity are complex and multifaceted ranging from the broader political context, to the community, the family, pre-university educational institutions, teacher training at all levels, and universities. Effective interventions must therefore target all these dimensions of society

Addressing gender issues in the wider society

1. Adequately resourced Ministries of Gender. Many countries now have Ministries responsible for gender and social development. These Ministries need to be adequately resourced so as to undertake their role of sensitizing society and providing support to the Ministries of Education, other relevant ministries and civil society on practical strategies for addressing gender issues in education.

Addressing gender issues at pre-university levels of education

2. Develop a gender policy for the ministry of Education: The ministries of education should develop a sectoral gender policy aimed at providing a framework for integrating gender at all levels of the education system. The policy should be accompanied with clear implementation strategies including those that have been found to work such as:

- Special targeting of girls' primary and secondary schools for provision of ample resources for science and mathematics education so that girls embrace science subjects from an early age. This effort can prioritise schools in disadvantaged areas for instance rural areas that tend to have less access to educational resources in many developing countries.
- Awareness-raising campaign on science and agriculture in secondary schools, targeted at girls. This can be through presentations aimed at dispelling gendered myths of science and agriculture, promoting agriculture as a viable and attractive career path, and providing administrative information on entry requirements, scholarship opportunities (particularly for women), application procedures and the types of support provided by universities. Use of female role models including successful female professionals to deliver the presentations provides a positive example of women in agriculture for the pupils.
- Review of textbooks and other training materials at primary and secondary school levels to identify and address gender biased messages.
- Review of primary and secondary school teacher training curricula to incorporate gender. In addition, conduct in-service seminars for secondary school teachers to promote agriculture and science, and career opportunities for both men and women. Teachers should be encouraged to promote science and agriculture to their students, particularly girls.

Addressing gender at university level:

3. Universities should undertake institutional audits and reforms to increase gender-sensitivity. Tested strategies in this area are presented below.

3.1 Establishment of adequately resourced gender mainstreaming structures charged with overseeing gender mainstreaming in the whole university. A gender focal point person(s) should be identified in each department/faculty and for the institution as a whole. The selection of candidates for the role should be based on their skills and interest in gender and diversity issues, and not their gender per se. Focal points should receive training in gender mainstreaming in higher learning, both from an institutional and curriculum perspective.

3.2 Development of a gender and diversity policy to guide all efforts aimed at addressing gender and diversity matters in the institution. The policy should be accompanied by an implementation strategy which identifies explicit activities to increase the number of women and minority groups in the institution, promote an equitable learning environment and build gender-sensitivity into the curriculum. The policy should also define lines of responsibility for gender and diversity issues, and financial and other resources for policy implementation. A high level of commitment from management is essential to ensuring the positive impact of the gender policy.

3.3 Undertake a policy-audit for gender-sensitivity: the gender mainstreaming unit should undertake a review of all existing policies for their gender-sensitivity or recommend the development of policies where there are gaps.

3.4 Develop or enhance student and staff gender and diversity monitoring systems. Universities are encouraged to develop and/or enhance the existing monitoring systems of staff and students to include more information on demographic characteristics, such as sex, ethnicity, language, nationality, and on disability and other context specific forms of disadvantage. This will involve revising existing forms, databases and report templates. This will help to determine the level of participation of different groups in specific subjects and the institution as a whole, as well as the impact of special measures to encourage participation of these groups. Figures should be reported annually and used to make improvements.

4.0 Increase opportunities for women to enter and progress through higher learning in science and agriculture.

4.1 Establish a pre-entry remedial programmes targeted at women and disadvantaged groups: This should include group and one-to-one support and mentorship for individuals in both academic and personal issues, which has proved successful in increasing the completion and success rate of these students. It is important to build specific skill sets such as studying effectively and time management. This programme will need to be conducted alongside institution-

wide sensitisation to combat negative stereotypes of the abilities of students in the programme.

4.2 Develop science and agriculture scholarships for women: Specific scholarships should be developed for women at the undergraduate, Masters and PhD level. The scholarships should be advertised widely and efforts should be made to use media accessed by disadvantaged regions so as to attract girls from those areas.

4.3 Develop a flexible PhD programmes: funding should be targeted at encouraging women to undertake PhD programmes, including female staff at learning institutions. Flexibility should be mainstreamed into PhD programmes to enable more women to undertake studies. This may include allowing more time for completion, electronic correspondence, limited class time etc. Scholarships for PhDs should link with personal support through assigning mentors from the institution or an outside institution. Administrative, professional and personal support is particularly important for female PhD students.

5.0 Build capacity of staff and students in gender and diversity

5.1 Deliver gender and diversity seminars for staff: gender and diversity seminars should be held for all levels of staff at higher learning institutions to disseminate information on the gender policy and activities, and increase the awareness of staff on gender and diversity issues within the institution and in the curriculum.

5.2 Increase students' skills in gender and diversity through the curriculum: Gender and diversity should be mainstreamed in higher education curricula to ensure that graduates are capable of identifying and addressing gender issues in their work. This should be undertaken by the relevant faculty staff with support from the gender mainstreaming units.

6.0 Build a supportive environment

6.1 Create a one-stop-shop for students to receive gender-sensitive support: Develop a centre for students to access additional support, confidential advice and information both electronically or in person. This should include information on facilities, healthcare (particularly for mothers), reproductive health and university policies on violence, harassment and discrimination. There should be an informal support network where students can discuss issues in a comfortable environment.

6.2 Develop a voluntary student mentorship programme: a student mentorship programme should be developed, where students, particularly women, new students and people from minority groups, can partner with a peer for guidance and advice. The mentorship programme can be run on a voluntary basis and offer mentors the ability to improve their interpersonal skills and use it on their CVs. Institutional support should be provided, along with training opportunities of mentees. The impact of the mentorship programme on different groups should be monitored closely.

6.3 Advocate for mentoring programmes for female professional staff:

Mentoring programmes to offer mentorship opportunities for female professionals in the agriculture and science sectors, along with opportunities to network with female scientists across Africa. This initiative would help women gain confidence and support in a male-dominated sector.

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