

Progress in promoting women in Science and Technology in Africa: the current status and opportunities

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Outline

- The current status, access, participation and opportunities for women and girls in S&T in Africa
- Identification of the minimal contribution of women at past and present S&T developmental stages: learning, career and profession due to men's domination and initial lack of interest
- ❖ Global efforts have been made by world organizations and NGO's to eradicate women's subjugation, elevate the status of women and to create gender balance.

Test of Civilization

- The level of civilization which any society has reached can be measured by the degree of freedom that its members enjoy. **The status of women is a test of civilization.** Measured by that standard, Africa must be considered low in the scale of civilized nations. - **SOUTH AFRICA'S BEIJING + 20 REPORT, 2000**
- **In that charter....**Single society; laws against women, common struggle, education for all

Current status

- ❖ Africa's capacity to compete on the global market depends on its ability to innovate using science technology and innovation (STI)
- ❖ Education and training will create mass of experts in STI and providing equal access for both men and women.
- ❖ The numbers of women who pursue science and engineering programmes in higher education institutions are fewer than men.
- ❖ Hindrance by discrimination and suppressed motivation.
- ❖ Few African women in S & T face unique challenges
- ❖ Derailment of their careers at a much higher rate than their male counterparts.
- ❖ There are very few women scientists and engineers
- ❖ Even Fewer in leadership positions.

Status of gender equality in student enrolment in selected HEI in IUCEA

HEI members of IUCEA	Total Students	Female Proportion of Total students	Female proportion of Science and Technology Students
10 Universities and Colleges in Kenya	77,921	41%	17%
11 Universities and Colleges in Tanzania	38,683	39%	24%
7 Universities and Colleges in Uganda	21,467	51%	18%
National University in Rwanda (NUR)	12,796	29%	27%

Source: Extracted from IUCEA 2009 Year Book and Facts and Figures of NUR





Fewer women participate in STEM Careers in Africa

- ☐ High Level Computing;
- ☐ As Scientists;
- ☐ Field Engineers;
- ☐ Top Managers;
- ☐ Politics and governance;
- ☐ Astronauts, Pilots
- ☐ High Techs

Assessment of Education WRT field of study: Case study of South Africa

Males were three times more likely (with a percentage share of 75,4%) to be qualified in physics/mathematics/engineering than females – Census 2011

Analyses of the share in employment level of males and females

Field of Study	Males		Females		Both sexes	
	Numbers	%	Numbers	%	Numbers	%
Social Studies/health sciences	139	34.6	263	65.4	402	17.4
Arts/Education/hospitality	154	32.4	321	67.6	475	20.6
Economic and management Science	325	45.3	335	50.7	661	28.6
Physical/mathematical science/engineering	373	75.4	121	24.6	495	21.5
Agriculture/others	145	54.9	129	47.1	274	11.9
Total	1136	49.3	1170	50.7	2306	100

Source: Census 2011

Other areas of Interest include: Governance and Political positions

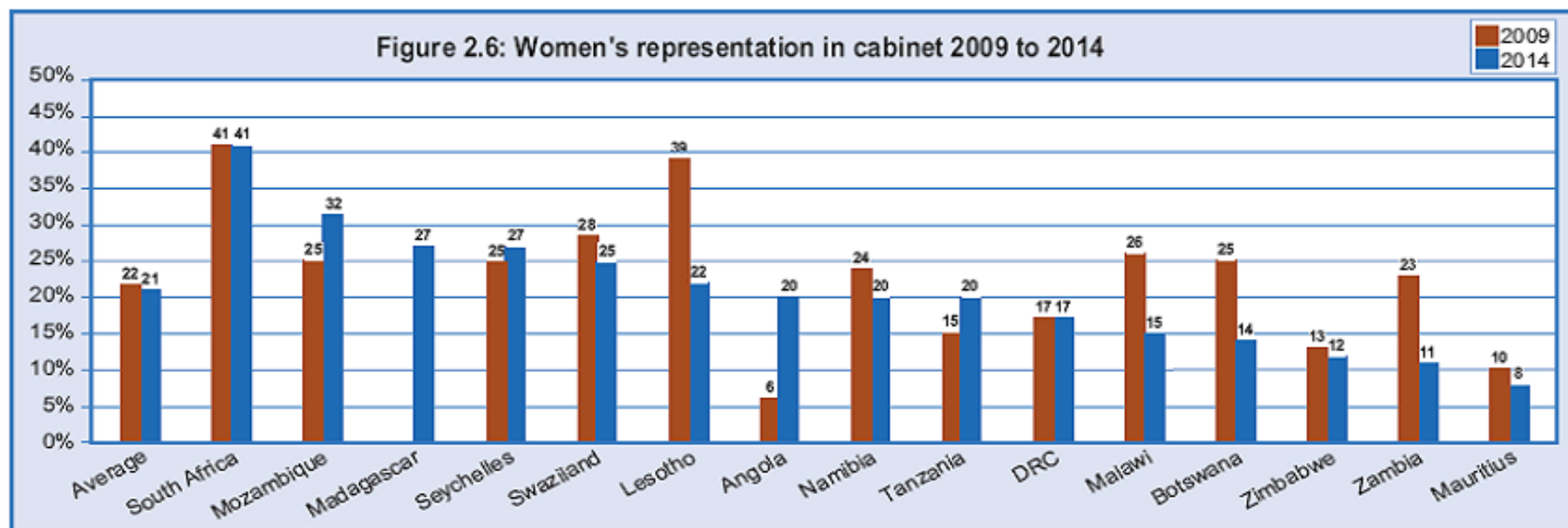
Women Cabinet Ministers from 1994 to 2014

	1994	1996	2003	2004	2009	2014
No. of Women Ministers	3	4	9	12	14	15
No. of Male Ministers	24	21	18	16	20	20
Total No. of Ministers in Cabinet	27	25	27	28	34	35
% representation of Women Ministers	11%	16%	33.3%	42.8%	41%	42.85%

Source: South Africa's Beijing +20 Report: February 2015

In South Africa and SADC

Cabinet



Source: 2014 SADC Gender Protocol Barometer.

United Nations Commission on Women Status and Africa's Participation over the Years

Year	Agreed Conclusions
1996 (40 th Session)	• Implementation of Strategic Objectives and Action in the Critical Area of Concern: Poverty • Women and Media
1997 (41 st Session)	• Women and the Environment • Women in Power and Decision-making • Women and the Economy • Education and Training for Women
1998 (42 nd Session)	• Violence against Women • Women and Armed Conflict • Human Rights of Women • The Girl Child
1999 (43 rd Session)	• Women and Health • Institutional Mechanisms for the Advancement of Women
2000 (44 th Session)	• B+5 Review: NO AGREED CONCLUSIONS
2001 (45 th Session)	• Women, the girl child and HIV and AIDS • Gender and all forms of discrimination in particular racism, racial discrimination, xenophobia and related intolerance
2002 (46 th Session)	• Eradicating poverty, including through the empowerment of women throughout their life cycles, in a globalizing world • Environmental management and mitigation of natural disasters
2003 (47 th Session)	• Participation in and access of women to the media, and information and communication technologies and their impact on and use as an instrument for the advancement and empowerment of women
2004 (48 th Session)	• The role of men and boys in achieving gender equality • Women's equal participation in conflict prevention, management and resolution in post-conflict peace building.
2005 (49 th Session)	• B+10 Review: NO AGREED CONCLUSIONS
2006 (50 th Session)	• Enhanced participation of women in development: an enabling environment for achieving gender

	equality and the advancement of women, taking into account, inter alia, the fields of education, health and work
2007 (51 st Session)	• Elimination of all forms of discrimination and violence against women and girls
2008 (52 nd Session)	• Financing for Gender Equality and Women's Empowerment • Women and Armed Conflict" – as a review of the agreed conclusions of the 48th Session of the UN CSW in 2004
2009 (53 rd Session)	• The Equal Sharing of Responsibilities between Men and Women, including Care-giving in the Context of HIV and AIDS • Equal Participation of Women and Men in Decision-Making Processes at all Levels" – as a review of the agreed conclusions at the 50th session of the CSW in 2006
2010 (54 th Session)	• B+10 Review: NO AGREED CONCLUSIONS • Review of its contribution to shaping a gender perspective towards the full realization of the Millennium Development Goals.
2011 (55 th Session)	• Participation of women and girls in education, training, science and technology, including for the promotion of women's equal access to full employment and decent work • The elimination of all forms of discrimination and violence against the girl child (Agreed conclusion from 51st session held in 2007)
2012 (56 th Session)	• The Empowerment of rural women and their role in poverty and hunger eradication, development and current challenges • Financing gender equality and the empowerment of women (Agreed Conclusions from 52nd Session held in 2008)
2013 (57 th Session)	• Elimination and prevention of all forms of violence against women and girls • The equal sharing of responsibilities between women and men, including care-giving in the context of HIV/AIDS (Agreed Conclusions from 53rd session held in 2009)
2014 (58 th Session)	• Challenges and achievements in the implementation of the Millennium Development Goals for women and girls • Participation of women and girls in education, training, science and technology, including for the promotion of women's equal access to full employment and decent work (Agreed Conclusions from 55th session held in 2011)

Progress made and challenges

- Girls are more likely to be out of school than boys in primary and secondary school with a widening gap in secondary education.
- At the tertiary level, the global rate of women's enrollment has increased almost twice as fast as men's enrollment over the last four decades.
- United Nations agencies, civil society organizations and other stakeholders, such as private sector companies and foundations, have launched initiatives to expand women's and girls' access to and participation in STEM-related education and training.

Progress made and challenges

- Increased number of academic scholarships for female STEM students both for most developing countries of Africa
- Nigeria have implemented STEM camps and intensive training programmes for girls.
- Different platform for a global collaborative network to raise girls' interest in STEM and improve their digital skills
- iSchool Zambia' has developed a blended e-learning solution, accessible on a low-cost low-(solar) powered tablet, preloaded with the entire Zambian primary curricula for interactive enquiry-based 4

Progress made and challenges

- South Africa promotes the advancement of women and girls in STEM education by providing female students with scholarships and information on how to access opportunities.
- UNESCO has also partnered with Nokia to enhance quality education by using mobile phones to supply quality educational material for the training of teachers in rural areas in Mexico, Nigeria, Pakistan and Senegal.

Progress made and challenges

- Rwanda has attained gender parity at the level of parliament and is atop all nations by having the highest proportion (56%) of women legislators. SSA has an 18.7% share of women in parliament, second to Europe (with Nordic countries included) where 21.4% of women are parliamentarians.
- In some degree, there is a narrowing of the gender gap, even though there is the widening of the inequality gap in general between the rich and the poor.
- South Africa has since the adoption of the Beijing Declaration and its Platform for Action, been making consistent effort at fulfilling its obligations as contained in the Agreed Conclusions and Political Declarations through enacting legislation, policies and strategies for women's empowerment, advancement and provision of human rights.

Progress made and challenges

Education bodies, especially the HEI, are also undertaking various initiatives to promote women's access, retention and completion of higher education in general and in STEM disciplines. S

Association of Africa Universities (AAU), the Inter-University Council for East Africa (IUCEA), the Africa Network of Science and Technology Institutions (ANSTI) among many others.

A survey of 1,345 women university graduates of science and technology programmes in Nigeria, (Aderemi, 2009), shows a drastic increase in the number of females graduating in SMT discipline over the years with 70% of the respondents graduating between 1990 and 2000

Progress made and challenges

- In South Africa, a lot has been done to improve the living conditions of all citizens as indicated by the Living Conditions Survey 2008/2009. Sampling as indicated by Poverty index according to gender:

Reason

- The low rate of participation of women in employment is a major reason why majority of women are living in poverty although this trend is improving according to the Quarterly Labour Force Survey of 2013 as indicated

Poverty indicators by sex

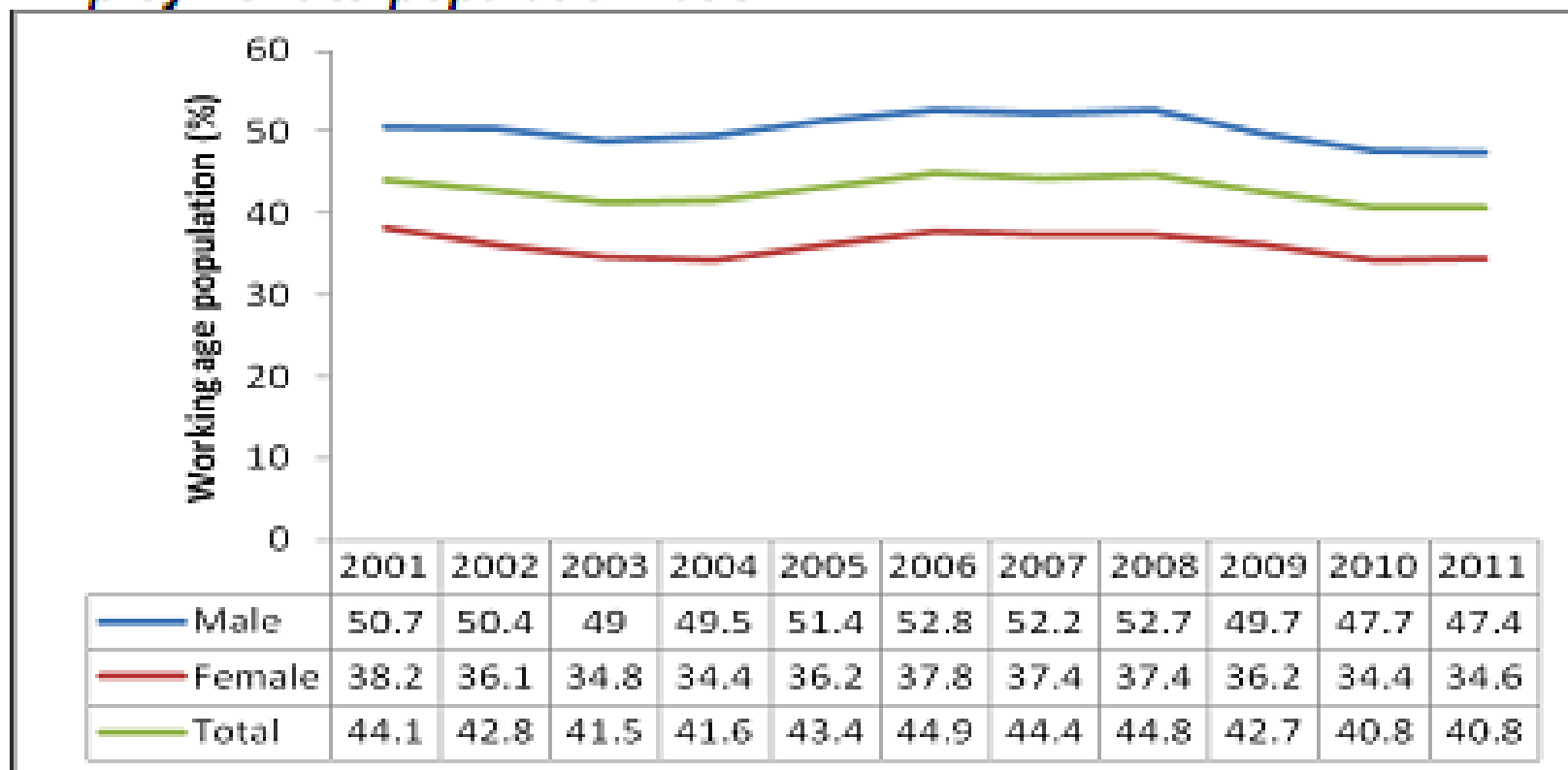
Sex	Food poverty line (R305)			Lower-bound poverty line (R416)			Upper-bound poverty line (R577)		
	P0	P1	P2	P0	P1	P2	P0	P1	P2
Male	25.2	8.1	3.6	37.3	14.3	7.2	50.4	22.7	12.3
Female	27.3	8.8	3.9	40.4	15.5	7.8	54.1	24.5	13.8
RSA	26.3	8.5	3.8	38.9	15.0	7.5	52.3	23.6	13.3

Females had a higher poverty headcount (27.3%) than males (25.2%) during the survey period when using the food poverty line. The poverty headcount for females was 2.1% higher than that of males. A similar pattern is observed when using the upper-bound poverty line, yielding 54.1% for females and 50.4% for males. The percentage difference for male and for females using the upper-bound poverty line was higher at 3.7%.

Percentage share of poverty by sex

Sex	Food poverty line (R305) (%)	Lower-bound poverty line (R416) (%)	Upper-bound poverty line (R577) (%)	RSA (%)
Male	46.2	46.2	46.4	48.2
Female	53.8	53.8	53.6	51.8
RSA	100.0	100.0	100.0	100.0

Employment-to-population ratio



Labour Force Survey (2001 - 2007); Quarterly Labour Force Survey (2008 - 2011),
Statistics South Africa

Progress made and challenges

- **Education and Training**

Education for All (EFA) 2013 Country Progress Report: South Africa gender parity in early childhood development has been achieved (2007 and 2012) for female and male learners aged 0-4 years. The compulsory education age group is characterized by high enrolments, with 99% of children aged 7- 15 years accessing schooling.

Between 2002 and 2013, there is approximately equal participation in education by both sexes, with a Gender Parity Index for 7 to 15 years being achieved.

Percentage of 7-15 years old attending educational institution by gender, 2002-2013

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Male	96.0	96.7	97.4	97.6	97.4	97.6	97.8	98.3	98.6	98.7	98.5	98.6
Female	96.6	97.6	98.1	97.9	97.8	98.2	98.1	98.6	98.7	98.8	99.1	98.9
Total	96.3	97.2	97.7	97.8	97.6	97.9	97.9	98.5	98.7	98.8	98.8	98.8

Source: Statistics South Africa, General Household Survey, 2002-2013, DBE own calculations

Table 1: Percentage of 16 to 18-year-old youth not attending education institutions by gender, 2002 to 2012

Gender	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Male	14.3	14.6	14.1	14.8	15.7	13.4	15.5	15.9	15.2	14.3	12.8	12.6
Female	20.9	19.8	20.5	20.9	19.5	16.3	16.9	17.5	19.0	16.0	15.4	15.1
Total	17.6	17.2	17.3	17.8	17.5	14.8	16.2	16.7	17.1	15.1	14.1	13.9

Source: Statistics South Africa, General Household Survey, 2002-2013, DBE own calculations

In recent years , there has been an increasingly common pattern in South Africa: Girls outperforming boys in literacy and numeracy tests. Taylor and Spaul (2013) examined this pattern using SACMEQ data .

2012 percentage scores by gender and subject

	Female	Males
Grade 3 maths	42.9	39.6
Grade 3 Home language	56.1	48.2
Grade 6 maths	27.5	25.8
Grade 6 Home language	46.0	39.6
Grade 6 FAL	38.8	32.6
Grade 9 Maths	13.4	11.9
Grade 9 Home language	46.9	39.9
Grade 9 FAL	38.1	31.4

Source: Education for All 2013 Country progress report: South Africa

Progress made and challenges

- Rwanda has reached parity in primary education (95.8% for girls and 94.7% for boys) and in private universities (52.7% for women and 47.3% for men)

Programme Support of the Education Sector Strategic Plan, 2006 - 2010

Indicator	2004 Baseline Level	2008	2010
% girls enrolled in mathematics in secondary school	22	26	33
% girls enrolled in chemistry in secondary school	35	40	45
% girls enrolled in 1 st year at tertiary level	20	25	30

Source: African Development Fund, Appraisal Report, 2006

Conclusion

- Development of a critical mass of scientists in Africa is one of the pillars for the promotion of S&T for development and because human resource capacity building cannot be completely successful if half of the population is faced with constraints in access to higher education in Science & Technology.
- The promotion of women in science and technology requires actions at all levels using different modalities including advocacy, enactment of appropriate policies and capacity building.
- There are also issues of strategy such as acquisition of skills for prospective market demands, capacity in teaching and research in new and emerging areas of science, advocacy, policy planning and management, mentoring and the use of role models in the promotion of women in science.

- Africa can meet the demands for quality science and engineering education and increase the number of women in science.
- These issues need to be discussed and strategies and actions developed to accelerate women's access and participation in science and technology



**References
Acknowledged!**

Thanks for Listening