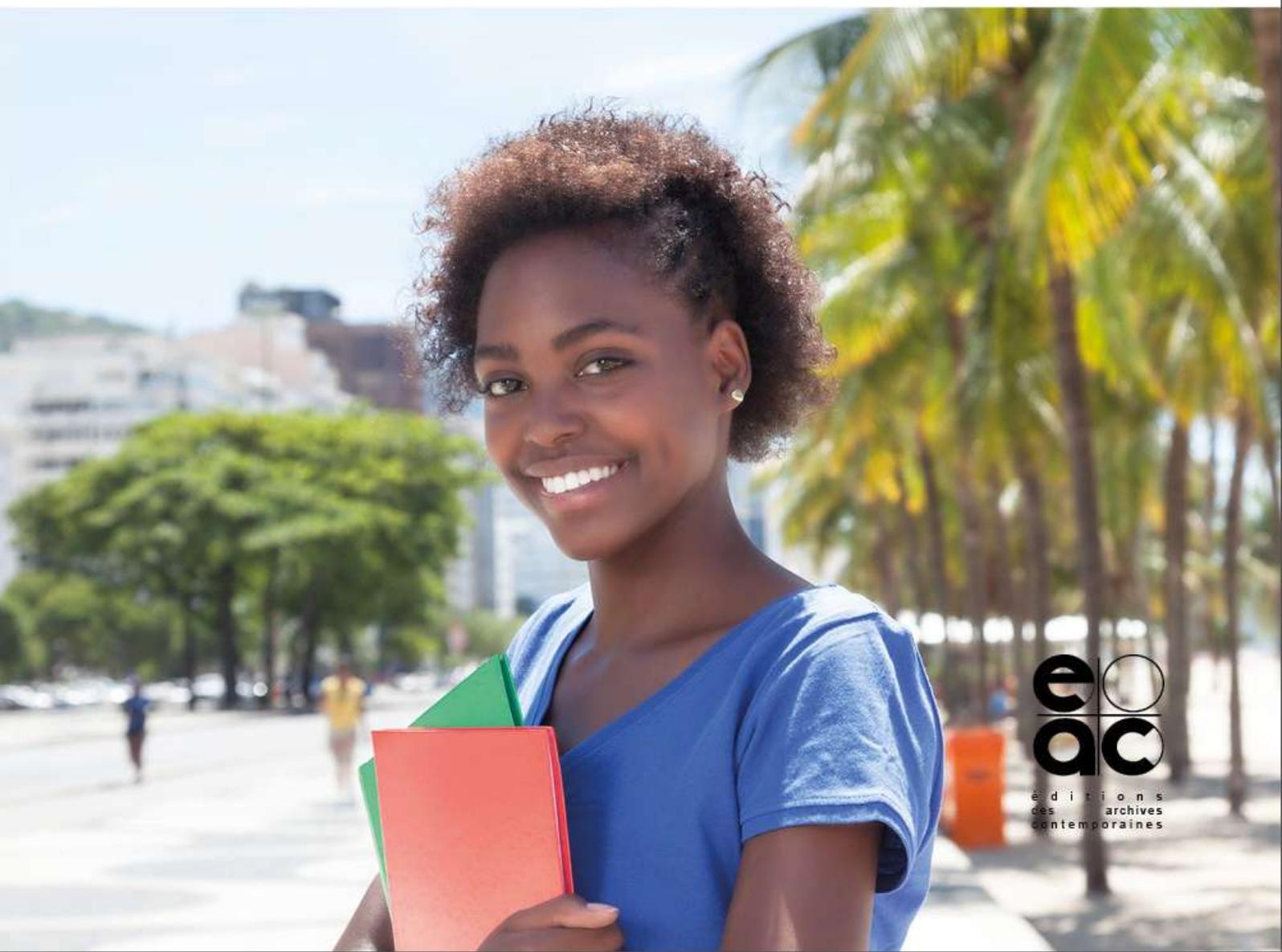


Compiled by
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WOMEN AND SUSTAINABLE DEVELOPMENT IN AFRICA

Selected Presentations
International Forum NASAC
Dar es Salaam, March 8-10, 2018



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Foreword

Préface

Prof. Mostapha Bousmina
President of NASAC

Since 2001, the question of sustainable development has been a topic of very high priority for the Network of African Science Academies (NASAC) and its member-academies. In 2015, it became obvious that with the UN defined “Sustainable Development Goals” (SDGs), the role of women in making it possible to meet the SDGs by 2030 was crucial, not just for SDG 5 (Gender equality and women’s empowerment), but for all the other SDGs. Women represent about half of the population, and are a major force initiating and implementing societal change in Africa. This matter of gender equity touches on various sectors of society, such as education, demography, health, economic growth, employment, among others. Demographic dividend, a topic selected by the African Union as the main focus for the year 2017, also ignited significant promise for gender equity when investing in the youth of under twenty-four year of age and constituting sixty per cent of the African population.

Therefore, in December 2016, NASAC’s General Assembly meeting held in Johannesburg, South Africa, endorsed the decision to organize an **International Forum on “Women and Sustainable Development in Africa”**. The Academy of Sciences of Tanzania was unanimously selected to organize and hold this meeting in Dar es Salaam, with the support of NASAC. The dates were determined as 8-10 March 2018 because 8th March marked the International Women’s day.

Following the General Assembly endorsement, the NASAC secretariat worked very closely with the NASAC Women for Science Working Group (WfS WG) to deliver a captivating forum agenda, gave inputs to the topics and proposed ideal speakers for the Forum. The WfS WG further decided to use the International Forum as an avenue to launch its publication, “*Women in Science – Inspiring Stories from Africa*”, a publication that by 2017, was already printed in both English and French with the aim of inspiring girls and young women to pursue science as career options. The French Academy of Sciences also facilitated the creation of an international organizing committee, which constituted of both French and African experts on various topics tackling the issue of “women and sustainable development in Africa”. This saw the

delivery of a robust event agenda, that was not only interactive to the participants present, but critically engaging to international, African and local audiences.

Besides the opening and closing sessions, four key topics were selected for deliberation as follows:

1. **Contribution to development by science**
2. **The role of research institutes, foundations, funding agencies and industry**
3. **Education and advocacy**
4. **Examples of successful actions on: Local and national roles of women in development** (*discussed in parallel session 1*); and **Reproductive health and development** (*discussed in parallel session 2*).

The French Academy of Sciences through its Committee for Developing Countries, partnered with NASAC to offer both organizational and financial support. With a finalized programme, additional financial and in-kind support was secured from the following partners:

- the Bill and Melinda Gates Foundation
- the Sanofi Espoir Foundation
- the French Agency for Development
- the French Institute for Development Research
- the IAP, the Inter Academy Partnership
- the French Embassy in Tanzania in Dar es Salaam
- the Acacia Company in Tanzania

During the international forum, a **“Declaration”** was drafted and discussed with the participants, and then subsequently endorsed by the members of NASAC, after the meeting, and distributed to the press and major institutions involved with *“Women and Sustainable Development”* on the continent. The declaration, which draws attention to the major themes deliberated on during the conference, is presented and discussed at the end of this volume.

As President of NASAC, I wish to express my gratitude to all the participants who came to Dar es Salaam to contribute their views and make recommendations on the role of women in the sustainable development of Africa. The event was graced by more than two hundred (200) participant from all walks of life, both male and female. My sincere appreciation also goes to the Organising Committee of the Forum, the hosts of the event, the Tanzanian Academy of Sciences, to all the sponsors who made

the event possible and successful. Finally, the invaluable and unmatched support accorded to the NASAC Secretariat by the Women for Science Working Group is also worth noting, as they continue to guide NASAC activities through the gender-lens. The unwavering support to NASAC by the French Academy of Sciences is also gratefully acknowledged.

Signed:



PROF. MOSTAPHA BOUSMINA
President, NASAC

Presentation:

This book presents a selection of the presentations that were made in Dar es Salaam, Tanzania, on March 8-10, 2018 during the International Forum on “Women and Sustainable Development in Africa” organised by NASAC, the network of African Science Academies, in collaboration with the Tanzania Academy of Sciences and the French Académie des sciences, in partnership with the Bill and Melinda Gates Foundation, the French Development Agency, the French Institute for Development Research, the Sanofi Espoir Foundation and the Inter-Academy Partnership.

The novelty of this forum was the emphasis on the role of science in resolving issues using an African scientists’ perspective. The conference highlighted how accelerated sustainable development is possible by proactively engaging women in policy and decision-making processes.

The Forum thus provided a platform for scientists to dialogue with and, provide evidence-informed advice to policy makers on the value of women’s participation and inclusion in national frameworks for realisation of the Sustainable Development Goals (SDGs); in particular, SDG 5 on ‘Gender Equality’.

This document brings together high-level interventions on women’s position in science, development, education, political action and health. It ends with the statement, “Women and sustainable Development in Africa, Dar es Salaam Declaration of 10 March 2018”, which is a 9-point call to policy makers and international institutions to ensure that African women can play their full role in the sustainable development of the Continent.

Présentation:

Cet ouvrage présente une sélection des interventions faites à Dar es-Salaam, Tanzanie, du 8 au 10 mars 2018 dans le cadre du Forum international sur « Femmes et développement durable en Afrique » organisé par la NASAC, le réseau des Académies des sciences africaines, en collaboration avec l’Académie des sciences de Tanzanie et l’Académie des sciences de France, en partenariat avec la Fondation Bill et Melinda Gates, l’Agence Française de Développement, l’Institut de Recherche pour le Développement, la Fondation Sanofi Espoir et l’Inter-Academy Partnership.

La nouveauté de ce Forum était l’accent mis sur le rôle de la science dans la résolution des problèmes du point de vue des scientifiques africains. Il a été montré comment il est possible d’accélérer le développement durable en impliquant activement les femmes dans la prise de décision politique.

Le Forum a ainsi permis aux scientifiques de dialoguer avec les décideurs et de leur fournir des conseils éclairés sur la valeur de la participation et de l’inclusion des femmes dans les cadres nationaux pour la réalisation des Objectifs du Développement Durable (ODD), en particulier l’ODD 5 sur « l’égalité des sexes ».

Ce document rassemble des interventions de haut niveau sur la position des femmes dans la science, le développement, l’éducation, l’action politique et la santé. Il présente la déclaration « Les femmes et le développement durable en Afrique, Déclaration de Dar es-Salaam du 10 mars 2018 », qui est un appel en 9 points aux décideurs politiques et institutions internationales pour que les femmes africaines puissent assumer pleinement leur rôle dans le développement durable du Continent.

Sponsored by: French Academy of Sciences, Network of african science academies (NASAC), The Tanzania academy of sciences (TAAS), Bill and Melinda Gates foundation, l’Agence française de développement (AFD), l’IRD and Sanofi Fondation

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PART ONE: WOMEN & SCIENCE

From personal secretary to medical doctor and president of Tanzania academy of sciences.

*Du poste de secrétaire personnelle à celui de docteur
en médecine et présidente de l'Académie des sciences
de Tanzanie*

Esther Mwaikambo

President of the Tanzanian Academy of sciences

Abstract: From village to the Presidency of the Academy of sciences, the arduous journey by a determined woman.

Résumé : Du village à la Présidence de l'académie des Sciences, le parcours ardu d'une femme déterminée.

My childhood

I was born on 12th December, 1940 in Mwika village, Moshi District, Kilimanjaro region, Tanzania to Eliaiho Ngoiya Lyimo and Daniel Lengaki Mariki. Both parents are deceased, my mother died in 1953 and my father in 1973 (May our All Mighty God rest their souls in eternal peace). I was a 5th born of 9 children, four females and five men. My parents were both peasants. My mother could not read or write but my father could read and write but was not educated. At the age of maybe 4 to 5 years, I was taken to live with my God father and his wife as they had requested. I lived with them as their daughter, but was mostly working as a helper or nanny to take care of their children and help in house chores. I woke up early in the morning and went to bed very late. I did a lot of manual work such as cooking for children and cleaning

dishes, cleaning the surroundings of the house and cleaning the cows sleeping place, the work I hated most.

Because I hated doing all this manual work, when my elder sister Dora was taken to school at the age of 8 years and myself 6 years, I requested my father to also take me to school. I knew if I went to school, I would not have to do all the manual work at home. My father agreed and both my sister and I were enrolled in standard one at Lyakirumu Primary School, Mwika, Moshi. At this time I was still living with my godfather but it was ok since he had no objection for my going to school. However, before going to school every day I had to wake up early in the morning and do all the chores at home after which I could go to school. The school was near home so I had no problem with that. I enjoyed going to school because it saved me from doing the manual work at home. The teacher Mr. Ernest was very good to me and very encouraging. I was very good in Arithmetic which was my best subject. My teacher was very pleased with me and as such he liked me a lot. He made sure I continued to do well in arithmetic and in other subjects too. Both my sister and I did well for four years at that school. Come fourth year at this school, it was time for Provincial standard IV examinations. Both my sister and I passed very well and were transferred to Ashira Girls Middle school which was in Marangu, Moshi.

My four years as Ashira Girls middle school

Ashira Girls middle school was a mission boarding school for girls. Only the best students from all over the Northern Province were selected to join Ashira middle school. My sister and I were therefore among the best brains from our primary school in Mwika, Moshi. This school was about 7 kilometres from our home; we stayed in boarding school and only could go home during weekends and during holidays. I was very pleased to be in a boarding school and no longer staying with my uncle and doing all the manual work which I hated. I vowed to study very hard so that I don't have to go back home again to do the manual work which I hated. We only used to go home some weekends to see my mother who was already sick. Whenever I went home during weekends, I went to visit my Godfather who had been quite supportive of my education. I knew he was supportive because whenever I went to see him he gave me some pocket money.

My mother is seriously sick

While in Ashira girl's school, our mother started getting very sick with some kind of an eye disease. The eye protruded outside, growing very big and discharging pus continuously. It was really frightening. It was humiliating to see her suffering. The disease was devastating for all of us and we just kept crying each time we were with her. My father took her to various hospitals in Moshi, Machame and Tanga for treatment but all in vain. She was operated several times without any improvement. The eye continued to grow and to ulcerate, deforming her faces completely. We saw her dying a slow death. She fought the disease with a lot of strength. Despite being so sick she would counsel us all the time. She told us to study hard so that we do not suffer when she dies. She was always very encouraging to us all. She always told me

to go to school and not to cry for her. She always said to me that I cannot live in the village because I was lazy and that only school will rescue me from this the manual work in the village. Throughout this period and at my age of 11 years, I could see the suffering in my mother and I knew she was not going to live. She suffered a lot. Besides she had two little children all the time with her, my brother Willy who was on the breast and Godfrey who was about 2 years. It was scary to look at her.

My mother dies in 1953

On one eventful day when I was already 12 years and in standard VI, one of our relatives came to our school to get permission for us to go home. This was unusual since it was a weekday, permission was granted and we went home only to find that our mother had died. I always remembered her last words to me. Study hard for education will be your saviour. You are lazy and cannot afford to live in the village, but if you study hard, education will save you from the manual work. Rumours went around that my mother was bewitched by a close relative who was our uncle's wife and a very close member of our family. I refuse to believe that statement. This was my turning point for my decision to study very hard to find out what disease had killed my mother. I had no idea about being a doctor, but I thought I would work very hard at school and read many books and when I grow up I will know the cause of my mother's death.

Responsibility for the younger children after mother's death

My mother died and left 9 children. The first two were males who lived in the village with our parents. Both of them had refused to go to school. They were young and not married yet. Our eldest sister Lipina was already in Tabora girl's secondary school in standard 9. My immediate elder sister Dora and I were both in Ashira girl's school in standard VI. The family decided that my younger sister Felista who was in Standard III should curtail her primary school classes to assume the role of a caretaker for the rest of the young children at home. Felista who was about 9 years did as decided by the family members. She stopped school and stayed home to take care of our three young brothers: Boniface 6, Godfrey 4 and Willie 2 year old. She stayed home under the supervision of our two elder brothers in the village. The family also decided that our elder sister Lipina who was already in Tabora Girls School standard 9 should continue with her schooling up to standard 10. She should then take a course to enable her to get a job. She went back to school, completed her standard 10. She passed well but for the above reasons she could not continue to Standard 11. She was posted to Dar es Salaam for an administrative and office management course which she completed successfully after one year. She was posted to work in Mbeya region. After she started working, she went home and took both Boniface and Willie to live with and educate them. At home life was tough. We all had very little to eat. We lived and ate from the dust bin. Our father was not very close to us and our grandmother was old and needed to be cared for. The family also decided that Dora and I should go back to school to proceed with studies at Ashira girl's school. After four years at this school it was time for Standard 8 Territorial Examination. My sister passed well with 2nd class and chose to go to teacher training college. After two years

of training she qualified and was a registered teacher. Immediately after she started working she went home and took the remaining children Felista and Godfrey to go to live with and educate them.

Esther goes to Tabora girl's school

Devastated with my mother's untimely death, I vowed to study and work very hard in order to find out about the truth of my mother's death. With this determination I got first class in my Standard 8 Territorial examination. This enabled me to move to standard 9 at Tabora Girls Secondary school in 1955. Tabora girl's secondary school was the best of all secondary schools in Tanzania during those days. Only the best brains from all over the country were enrolled in this school. I did well, but the competition was very high. So when I got to standard 12, equivalent of Form IV today, it was time for Standard 12 Cambridge examination. When the results came back, I did not pass well as I had gotten 3rd class. Therefore I was shattered as I could not proceed to high school to find out why my mother died. I was very disappointed but did not stop there. It is also important to note here that our school system, during those days, did not encourage girls to study science subjects. These were reserved for men who were said to be more intelligent.

My training as personal secretary/office manager

After standard 12 and based on the subjects that I studied in O levels, I was posted to Dar es Salaam Technical College (today DIT) to study secretarial studies and office management. The programme included short-hand, typing, audio typing, book keeping and office management. I successfully completed the programme and immediately was posted to Mbeya Regional Office to work for the Provincial Medical Officer as his Personal Secretary.

My work as Personal Secretary

I reported to Mbeya regional hospital. My immediate boss was Mr. Masanja the chief clerk. My top boss was the Provincial Medical Officer Dr. Anderson, an English doctor. I took up employment in this office in early 1960, and within one year I had already resigned. Why? Because I could not stand being called all the time by a bell. Each time the boss wanted my attention he would call me by ringing a bell. I got so irritated. Mr. Masanja, my immediate boss, thought it was Ok and always counselled me to the same. Unfortunately I could not agree with him. This led to my sometimes refusing to respond to the bell by pretending not to hear it. I was warned verbally several times by the chief clerk. But I continued to resist responding to the bell. Later I received my first letter of warning. I knew this was serious and wanted to resign from this position. Before resigning I consulted with my sister who did not support my idea and besieged me to not resign. I did not agree with her so I finally submitted my letter of resignation and started looking for another job.

Esther got a job as ground hostess

After resigning from my position I kept looking up for something else. There was an advert from the East African airways for 6 positions of ground hostesses. I thought I was qualified for these positions and so I submitted my application. I was successful and was offered a job as a ground hostess in the East African Airways. We were six girls. The six of us became the first Tanzanians to be employed as stewardesses in the former East African Airways in 1961. We were flown to Nairobi for training on how to behave, dress, and walk and how to interact with passengers. I started working as a stewardess, and enjoyed the work. This was in 1961, the year of Tanzania's independence in December 1961.

At this time there were a lot of opportunities for studies. Many applications were advertised to Europe, Russia, Canada, Australia, New Zealand, and England, etc. to study various programs. For some reasons, and although I really enjoyed working as a stewardess, after seeing those applications, I decided to apply for them. I applied to go for further studies in any field. I think unconsciously I was not contented with my education so something was pushing me to go further. The countries offering the scholarship were open for only some kind of programs especially those of liberal arts and social sciences. There were no scholarships for engineering, medicine or other science programmes.

Esther gets scholarship to USSR

Because of my qualifications, I decided to apply to go to Soviet Union to study journalism and was accepted. In 1962, I was awarded a scholarship to study journalism in USSR. The first batch of 22 Tanzanians students myself included left for State University of Moscow, in USSR August, 1962. We were admitted for a one year pre-university program to learn the Russian language. I was shocked to note that more than 80% of the doctors in the USSR were women. With this observation, coupled with my desire to find out the cause of my mother's death, I requested the university administration to allow me to study medicine instead of journalism. I was not qualified to study medicine as I had not taken science subjects at a higher level. The university administration agreed to allow me change faculty on condition that I would go back to high secondary school to pursue science subjects for 2 years. I am sure the majority of other Tanzanians would not have accepted this condition but I did agree to it happily and was thus admitted into Russian secondary school in Moscow where I studied high school science subjects for two good years. I passed the necessary examinations with flying colours including the Russian language as an interpreter from Russian to English. In 1965 I was finally re-admitted into the M.D. programme which I pursued until 1969 when I graduated with an M.D. This was my second turning point. I wanted to become a medical doctor and I did.

This is the disease that killed my mother

Immediately I started the MD programme I had the task of searching what disease had killed my mother. I searched from the books in the library and talked to my lecturers by describing to them what I had observed in my mother when she was sick.

I spent a lot of time going to the library to read about different eye diseases. During the good old days there was no Internet and we only depended mostly on books. In the USSR there were not much publications and it was not possible to get them from western countries. So my search was limited to text books and reference books. I finally found out the disease that killed my mother. My mother died from Cancer of the Eye known as Retinoblastoma. At this point I was very happy to know that my mother was not bewitched but died from a natural disease, Cancer of the eye. I sent this message back home to all my relatives to inform them the true cause of my mother's death.

Esther marries Gibbons in 1967

In between my studies, I fell in love with Mr. Gibbons Mwaikambo who was also a student, undertaking an economic and planning programme in Moscow. Although we went together to Tabora schools (himself boys and myself girls), we did not know each other. We only met in the plane on our way to Moscow. Gradually we fell in love. He completed his studies and graduated with a degree in economics and planning and returned home in 1967. I travelled back to Dar es Salaam, Tanzania with him where we got married on the 31st of August, 1967. Two weeks after our marriage, I left him and travelled back to Moscow to complete my studies while he remained home to start work and establish himself. He got a job with government as an economist and a planner in the Ministry of Finance and Planning.

Esther graduates in 1969 with an M.D.

I completed my studies, and graduated with an MD in 1969, becoming the first Tanzanian female doctor. This was a celebration for me and my family as I had finally achieved my ambition. It is important to note here that everything is possible. It only needs determination, discipline and hard work. I am one person who never loses hope, nor despair easily. I am also very optimistic in life and I hate to lose. "If other people could do it, why not me?" That is my slogan. I always have to struggle to achieve my objectives. When I plan or trust in something, I want to see it done. So my biggest motto is hard work and optimism. I work very hard to win, but should I lose, I always accept losses and I never sit down and nag, or complain, I move forward. As you can see, my journey to becoming a medical doctor was not straight. I strongly believe that my optimism and hard work were some of the factors that contributed to my success.

My Internship at Muhimbili Medical Centre

As if that was not enough, immediately after my return I was posted to Muhimbili Medical Centre for my internship. Everyone was surprised at me. They had not seen a woman doctor, even the doctors themselves and nurses were a bit hesitant to address me as a doctor. Patients used to call me "mama nurse". They were always waiting for a doctor to come and see them because they were seen only by a nurse. So it was tough to convince them I was a doctor. This did not take much time. After a few months, I am accepted as a doctor and they love me especially the mothers. Always they are

asking for that women doctor to see their child. That was my consolation. I finished my internship after rotating in all required Departments, including: Surgery two months, Internal Medicine 2 months, Paediatrics 3 months, Obstetrics/Gynaecology 3 months, Psychiatry one month and Ear nose and throat one month.

My first Registrar (Medical Officer III) position

Internship takes one year and one has to rotate in all those departments as seen above. I completed my internship successfully. My first appointment in 1972 was in the Department of Obstetrics and Gynaecology, Muhimbili Medical Centre. The position is known as Registrar (medical officer III). I was oriented and inducted very well into this discipline. I started working under supervision. My boss the late Dr. Tito Andrew (deceased), may God rest his soul in peace, taught me a lot. He made me love the subject. I learnt a lot from him and within six months I could attend patients, conduct deliveries, conduct C/S etc., the job was very heavy. I began work in the Labour ward from Friday to Monday non-stop, consulting, delivering, stitching episiotomies, rehabilitating women with PPH or APH with many blood transfusions and so many other challenges. Doctors were few, nurses were few, and it was just work, work and work. But as for me I enjoyed it. Dr. Andrew suggested and advised me to specialize in OB/GY, but I was scared. I refused. He recommended me for the same and begged me but I could not accept because it was too heavy a profession.

My experience in working in the children's ward

After working for one year in the Obstetrics/Gynaecology Department, it was time to rotate to another department to work under supervision. This time I was posted to the Department of Paediatrics and child health, where I worked under supervision of Prof Okeahialam. I worked in this department for 2 years and loved the discipline very much. There were a lot of challenges including inadequate human resources, inadequate facilities, poor infrastructure and many other challenges. The demand was high as we received many children with different health challenges including infectious diseases like tuberculosis, tetanus, whooping cough, polio, measles etc. Diarrhoeal diseases, malnutrition and low birth weight were rampant. The under-five, infant and neonatal mortality was scarily high. It was a nonstarter but as for me, I love challenges, and therefore I immediately knew this is where I belong. I decided to settle in paediatrics. I wanted to contribute in improving children's health and in reducing their morbidity and mortality. I wanted to help in this area. This was my 3rd turning point.

In 1974/75 Esther joined the M. Med (Paediatric Programme)

I was determined to contribute in improvement of children's health, and reduce their morbidity and mortality. This was my driving force to apply for the M. Med Paediatric Programme at the University of Dar es Salaam. Five of us were selected to join the programme including Dr.Keto, Machera, Mbise, Msengi and myself. I was determined to become a paediatrician, and so I vowed to work hard to make sure I do well in my studies and pass well to become a paediatrician. Work was my number one priority.

So I really had to struggle hard to make sure I pass well. This was a three year programme. My training went on well and after three years it was time for final examinations. In order to qualify for the final examinations, one will have completed all the requirements including passing the continuous assessment tests (both practical and written) and have completed a dissertation. We sat for the final examination which I passed very well and was awarded a Master of Medicine M. Med (Paediatrics) degree in 1977 becoming the first Tanzanian female Paediatrician.

Position as faculty member (academic position)

Immediately after graduation as an M. Med Paediatrics, three of us applied for a teaching position. Both men were appointed lecturers in the faculty of Medicine but not me. I did not know why I was rejected, but later on I came to find out that it was because of my sex. All the academicians in the faculty of medicine exclusively were males. Hence I was intruding into men's arena. I did not despair but kept applying until after one year in 1978 when I was accepted and appointed lecturer in Paediatrics and child health in the faculty of medicine, University of Dar as Salaam. Once again, I became the first Tanzanian female lecturer in the faculty of medicine.

Publications

In terms of research from 1994 to date, I have been working in collaboration with two universities in US Prof. Donald Granger from University of Salt Lake and Prof. Brice Weinberg from University of Duke, and one research centre in Australia with Prof. Nick Anstey from Menzies School of Health research in Darwin, Australia. We work on the role of Nitric Oxide in Severe Malaria from 1994 to date. Together we have published hundreds of articles in peer reviewed journals.

Promotions

If appointment to an academic position was a challenge, promotion at that level was even more of a challenge. It always took me much longer time to rise from one position to the other when compared to my men colleagues. Nevertheless, I am one of those people who do not easily despair. I continued to work hard to have all necessary conditions in place for promotion, but sometimes it did not work. I had to send my papers outside the country for assessment and requested the assessors to respond to the dean, faculty of medicine. That way I managed to get my first promotion from lecturer in 1978 to senior lecturer in 1986 (8 years). I raised to the position of Associate professor in 1992 once again the first female medical professor. Despite the constraints and challenges of appointment and promotions, I enjoyed working as an academician. I like being busy. Working as an academician you are normally very busy with the three responsibilities: you are either teaching, doing research, or consulting patients and students. No time to think about odd things, or to worry or to misbehave. All the time you were busy with students, research or your patients. I have had a really fulfilling employment as an academician. Working with children is highly rewarding. My work has been highly rewarding to me and I should believe to others too.

Head of Department

In 1992 it was my turn to be appointed head of the Department of paediatrics and child health at the faculty of Medicine. After I was appointed, this did not please some members of the staff. They were not prepared to cooperate. Some of the lecturers threatened to resign from the department while others had sworn over their dead body, never to be led by a woman. Irrespective of all these challenges, I took up the position and everything went on well up to the end of my tenure in 1996.

Sabbatical Leave at Harvard University

In 1994 I was a recipient of a Carnegie fellowship on Health and behaviour/anthropology. I spent 1 year at the Department of social medicine, Harvard University, where I worked with professor Maryjo on social medicine and culture. We did research together and published several papers. In 1995, I completed my fellowship and returned to Tanzania.

Formation of Tanzania Academy of Sciences in 1994

In 1994 Professors of universities, myself included, assembled and agreed to establish TAAS. This was driven by Prof. Peter Msolla who was the Secretary General. Election of officers included myself, one of the founders, who was elected the vice president of the academy, the position I held from 1994 to 2012 when I was appointed President of this academy. My tenure as president of the Academy was from July 2012 to September 2018. (Two terms of three years each).

As president of the academy I got a high international exposure. Our academy is a member of Network of African Academies of Sciences NASAC. Our academy is also affiliated to the Inter Academy Panel and Inter Academy Medical Panel. The academy also collaborates with other world academies of sciences. As president of TAAS I have had the opportunity of attending many international science meetings including meetings of: Inter Academy Panel and Inter academy medical panel, Royal Society of the UK, National Science Academies of the US, commonwealth science conference meetings and many others. Other meetings attended are the annual NASAC and AMASA meetings. Last year, the Tanzania academy of sciences hosted an international conference on Women and sustainable development Goals in Africa. All these meetings and conferences have promoted and strengthened me in sciences matters.

My tenure as Vice Chancellor of HKMU

In 1997 I left MUHAS and joined Hubert Kairuki Memorial University as Deputy Vice Chancellor for academic affairs. In 1999, I was appointed the Vice Chancellor of HKMU after the death of its founder and first V.C. This position gained me a lot of exposure and I met and worked with many institutions of higher learning. I worked and interacted with diverse group of academicians. I had the opportunity of being appointed to many boards and university councils. For example in the year 2000, I was appointed one of the 8 members of the committee of Higher Education Accreditation council (HEAC) for several years until it was replaced by the Tanzania

Commission for Universities. In the same year 2002 I was appointed chairperson of the National Examination Council of Tanzania (NECTA), the position I held for 4 years until July 2006.

Esther's engagement with institutions of higher education

I have been a member of Mzumbe university council, Sokoine University council, a member of University of Dar es Salaam Senate, Mzumbe University Senate etc. I am a chairperson of Tumaini University Council and many other higher education institutions. I have been a member of the Commission for Science and Technology for three terms of 9 years. I have besides attended many scientific meeting and interacted with many international fellows of various academies. So that I feel I have a considerable exposure in this aspect of science.

My wishes now are to see a change of attitudes of doctors to become true medical professionals and to adhere and respect the Hippocratic Oath which we all made during graduation. Doctors should live their profession. They should respect their profession (this is my main wish).

Changes in life

Having been in the medical field for half a century (from 1969), I have seen a number of changes in my life time. I have seen substantial changes in the disease pattern. Most of the childhood infectious diseases have decreased substantially after introduction of maternal and child health services in 1974 and the Expanded programme of Immunization 1975. Some diseases like Polio have been eliminated while other diseases like tetanus and diphtheria are on the decrease. Under-five and Infant mortality have substantially decreased while neonatal mortality is also on the progress to a decrease.

What I am proud of

I am very proud to be a medical doctor and to be a role model for females to become doctors and help women and children in terms of disease prevention and treatment. Women suffer a lot from all kinds of diseases, poverty and ignorance. As a female medical doctor, together with other female colleagues, we have developed and are running breast cancer campaigns since 1987 creating awareness and sensitizing women to take care of their health, to screen for breast cancer and cervical cancer. We have started using the HPV virus to prevent cervical cancer. I am very proud of this. This was only possible because as a medical doctor I founded the Medical women association of Tanzania through which this programme is implemented. We have reached millions of women through this programme. Without being a doctor, I could not have done that.

My achievements

In 1969 I became the first Tanzanian female medical doctor, but today there are equal opportunities for boys and girls of becoming doctors and the same with all other science programmes. My pride is to have been a trailblazer in sciences for women.

I am known as a woman of many firsts including: First female doctor, first female professor of medicine, first female vice chancellor first female president of Tanzania Academy of Sciences, etc. I have chaired and am still chairing several university councils, boards, committees and am a member of many organizations etc., etc.

Most difficult decision made

The most difficult decision that I have made in life is that of deciding to go to USSR at the age of 19 years, despite all the encouragements from my family, colleagues and friends. This was a major decision on my part. Once I decided I did it. The other decision was to go back to secondary school in USSR to do sciences so that I could join the medical program. That was tough, but I did it. I wanted to be a doctor and if that was the only way, I had to go for it. The other decision is that of embarking on M.D. program which had never been done by a Tanzanian woman, as young as I had been with no role model and no encouragement from any one, I did it. I am glad I did for now females in Tanzania are following in my footsteps. It was also a tough decision to take up some of the positions which have always been held by men.

Throughout my working as a medical doctor and professor of Paediatrics and Child health I have held many positions (formal and informal) formerly only held by men. Here are some of them:

- President of Tanzanian Public Health Association (TPHA) 1999-2006
- Vice Chancellor of Hubert Kairuki memorial University (HKMU) 1999-2006
- Chairperson of Research on Poverty Alleviation (REPOA) 2000 – 202012
- Chairperson of National Examination Council of Tanzania (NECTA)
- President of Tanzania Academy of Sciences (TAAS) 2012-2018
- Chairperson Tumaini University-Makumira (TUMA)

What has yet to be achieved?

I am currently working on trying to achieve the goal of re-inducing a professional ethics culture in the minds of our doctors and nurses. I want to see that medical professionals adhere to medical ethics. About my life as of now, I am quite happy and satisfied that I have done what I mostly wanted to do. I have done my part. I believe that I have some contributions in the medical field. I have been a trailblazer for other young women of this country. It was important to show by practice that it can be done and to remove the myth in the minds of females that STEM is hard, it is for men and is not for females. On the contrary I would say it is easier for it does not need too much reading, rather understanding. I believe that social sciences, law and history are more difficult for there is a lot of reading.

When people look back at your life, how do you want to be remembered? I wish to be remembered as a very humble but highly courageous hard working woman. A woman

of strength. A woman who does not get discouraged easily, a woman of principle as I stand for what I believe. I would venture into any area where most women consider impossible to venture. For example, when my name was mentioned as a candidate for the position of president TAAS, both men and women were unhappy about it. Some struggled to have me withdraw, but I persisted until the voting stage when I found myself winning the position. But believe me, many people until today have been uncomfortable about my being president of all sciences in this country. I have made it possible for women to believe that nothing is impossible for a woman. At my home in Moshi, my own late brother Odom and his late wife Eline Mangowi always called me a woman who can change a pig into human being. They always thought of me a woman who made every impossible possible. Don't ask me why but that is the way they thought.

Awards

During my working period as a medical doctor and professor of Paediatrics, I have received several awards and recognitions:

- In 2008, I was invited by the Ministry of Education, Uganda to give the Sarah Ntiro Lecturer and Award
- In October, 2009 I was invited by Harvard university, Boston to receive the "Harvard Distinguished African lecturer award"
- In December 2009 – I was a recipient of the "Women Achievement award in Health"
- In February 2013 I was the recipient of the "Martin Luther King Jr Drum Major for Justice Award" presented here in Dar es Salaam by the American Ambassador to Tanzania
- In April, 2013 I was the recipient of the "Best African health Research Scientist Award" given by Ministry of Health through National Institute for Medical Research.
- In September, 2017, I was recognized as the "First Tanzania woman doctor" a trail blazer for women in Science. Award was issued by Tanzania Gender and networking Programme and handed to me by Mama Samia Suluhu, Vice President of Tanzania.
- In April, 2018 I received an award by Clouds FM as recognition of being a Woman of strength
- In 2018 I was elected an International member of the American Academy of Arts and Sciences (AAAS)

Femmes et développement durable en Afrique

Women and sustainable development in Africa

Catherine Bréchnac

Secrétaire perpétuel de l'Académie des sciences de France

Résumé : Cette réflexion sur le développement durable traite de façon résumée de deux questions complémentaires très importantes. Il s'agit, d'une part, de la croissance démographique, et, d'autre part, de l'accroissement de plus en plus rapide des connaissances scientifiques sur le fonctionnement du monde, depuis la physique avec par exemple les ondes gravitationnelles, jusqu'à la biologie avec le décodage des mécanismes complexes du vivant. Le partage de ces connaissances passe bien sûr par l'éducation, et par la réduction de la fracture, de plus en plus dangereuse, qui se crée entre la société et ses scientifiques. L'enjeu crucial, qui transcende les frontières et les politiques nationales, est de stabiliser la croissance démographique sur notre planète et d'imaginer comment réguler notre relation à l'utilisation des connaissances scientifiques. Le rôle des académies des sciences s'avère essentiel.

Abstract: This reflection on sustainable development summarizes two very important complementary questions. These are, on the one hand, population growth and, on the other hand, the increasingly rapid increase in scientific knowledge about how the world works, from physics with, for example, gravitational waves, to biology with the decoding of the complex mechanisms of life. Sharing this knowledge obviously requires education, and reducing the increasingly dangerous gap between society and its scientists. The crucial challenge, which transcends national borders and policies, is to stabilize population growth on our planet and to imagine how to regulate our relationship to the use of scientific knowledge. The role of the academies of science is essential.

Le réseau des Académies des sciences africaines (NASAC) a été l'une des forces motrices qui ont permis l'organisation de cette conférence internationale sur le thème « Femmes et développement durable en Afrique », qui s'est tenue à Dar Es Salaam du 8 au 10 mars 2018.

La date comme le lieu résultaient de choix délibérés: il s'agissait de faire coïncider un événement récurrent, la Journée internationale des droits des femmes, avec une réflexion de haut niveau sur leur place dans la science et le développement durable.

L'Académie des sciences de Tanzanie avait accepté l'année précédente de relever ce défi.

C'est évidemment avec plaisir que l'Académie des sciences de France a apporté son concours à cette réflexion, à laquelle j'ai souhaité contribuer personnellement.

Diachronie et synchronie se conjuguent lorsqu'on tente de définir des pistes pour le futur. Mais se conjuguent aussi les réflexions et les efforts des femmes, qui représentent la moitié de l'intelligence de l'humanité, et ceux des hommes car il n'est de développement possible que par le « construire ensemble ». Nous vivons un moment singulier de notre histoire : la coïncidence entre la croissance démographique et l'expansion de la somme des connaissances scientifiques qui est sans précédent. Cette double accélération est amplifiée par une hyper connexion entre les humains.

Pour ce qui est de la population de notre planète, elle dépassait à peine quelques millions d'individus aux débuts de l'agriculture, vers 8000 avant notre ère. Au milieu du XVIII^e siècle, on comptait environ 650 millions de Terriens et leur nombre a dépassé le milliard au XIX^e siècle. Depuis, en un peu plus d'un siècle, la population mondiale a été multipliée par un facteur compris entre sept et huit.

La démarche scientifique a été initiée par nos lointains ancêtres préhistoriques, qui pratiquaient notamment l'observation nocturne des astres. Ce sont les Grecs qui, dans l'Antiquité, ont développé progressivement les théories rationnelles, mais les premières confrontations, ou plutôt les premiers liens entre théorie et expérience se tissent à l'époque de Galilée. Les progrès de la science s'accélérent alors énormément.

Certes, aujourd'hui, l'esprit humain ne peut plus aspirer à une connaissance universelle comme en rêvaient les humanistes, mais les sciences nous entraînent dans d'extraordinaires aventures : explorer le monde quantique, les ondes gravitationnelles qui arrivent sur Terre en déformant l'espace, décoder les mécanismes complexes du vivant, pour ne citer que quelques exemples.

Cette double augmentation de la population et de la connaissance met simultanément en relief une double fracture :

- D'abord la fracture, déjà profonde et qui se creuse chaque jour, entre ceux qui savent et ceux qui ne parviennent pas à savoir : soit parce qu'ils n'ont pas pu – ou voulu – apprendre les bases de la démarche scientifique, soit parce que la nécessaire concentration sur leur survie et celle de leur famille est pour eux un enjeu à plein temps. Chacun est préoccupé par sa survie quand il vit avec moins d'un dollar par jour. On oublie trop souvent que plus d'un milliard d'êtres humains est illettré. Ce n'est pas, ce ne peut pas être un choix quand on vit avec moins d'un dollar par jour !
- Ensuite la fracture, non moins importante, entre les sociétés et leurs scientifiques dont l'opinion publique comme les gouvernants se méfient de plus en plus, mais aussi entre les sociétés elles-mêmes : l'inclusion de la démarche scientifique dans l'éducation et la formation n'est pas une évidence partout.

S'il ne fait aucun doute que l'accès à la démarche scientifique devrait être encouragé dès le plus jeune âge, cette double croissance pose avec une acuité particulière la question de l'appropriation des savoirs sophistiqués dans une démographie hétérogène.

Parmi les questions qui émergent pour l'humanité se trouve celle du lien complexe entre démographie, génomique et hérédité. D'apparition récente, la technique dite de ciseau moléculaire permet d'intervenir sur l'ADN, d'en reprogrammer le génome et de procéder ainsi à des modifications qui n'ont d'autres limites que celles de la bioéthique. Quelles composantes de la population mondiale pourront bénéficier de cette technologie ?

De plus, les choix sont loin d'être anodins : si remplacer un organe défectueux en « réparant » le génome n'implique pas de transmission à la lignée, toute intervention sur le patrimoine génétique modifie l'hérédité et les suites nous échappent. La production littéraire et cinématographique a beaucoup exploré ce champ, qui relevait encore de l'imaginaire il n'y pas si longtemps mais qui s'impose aujourd'hui dans la recherche.

Voilà pourquoi il est important de penser ensemble notre avenir en régulant à la fois démographie et génomique avant que ne se propage à grande échelle, « grâce à » ou « à cause de » la science, le rêve de l'homme augmenté, nourri par certains, qui pourrait bien se transformer demain en cauchemar pour tous. L'humain doit « garder la main » en toutes circonstances.

L'enjeu crucial, qui transcende les frontières et les politiques nationales, est de stabiliser la croissance démographique sur notre planète et d'imaginer comment réguler notre relation à l'utilisation des connaissances scientifiques. Pour atteindre ce double objectif, il est essentiel de réinvestir le champ de la transmission des savoirs par l'éducation et la formation. C'est là que tout commence, surtout dans les pays où la jeunesse représente parfois plus de 65% de la population, où les femmes n'ont pas assez accès à l'école et à l'autonomie, où l'espérance de vie ne croît que lentement et où il importe de mener aussi des politiques informées de santé publique.

Les différences de croissance économique entre les régions du monde, l'amélioration du bien-être des populations, l'accès à l'éducation et aux soins sont étroitement liés à une approche culturellement adaptée, socialement acceptable et scientifiquement validée de la démographie.

Cela demande un investissement en pédagogie et une vision du monde qui aille au-delà d'une génération : les effets des choix d'aujourd'hui, quels qu'ils soient, ne se feront sentir qu'un quart de siècle plus tard. Ne pas faire de choix, c'est en faire malgré soi. On a certes besoin de « plus d'école », mais aussi de « mieux d'école ». Et lorsque, comme souvent en Afrique, le secteur éducatif représente déjà plus de 20% du budget de l'Etat, il est difficile d'aller au-delà sans partenariats, sans un dialogue ouvert et confiant.

Nous avons, nous scientifiques, notre propre effort de plaidoyer à faire auprès des gouvernants, certes, mais aussi auprès des populations : il est essentiel que les so-

ciétés s'approprient les avancées scientifiques et entretiennent avec la communauté de recherche une relation de confiance.

Une société qui n'intégrerait pas l'apport des scientifiques serait aisément tentée de les expulser hors les murs ; les exemples passés nous montrent que les obscurantismes ont la vie dure et ne sont jamais exclusivement les fruits morts d'un passé révolu.

C'est à cette condition, munis des savoirs acquis, que nous pourrions ensemble tracer la route d'un vrai développement durable qui réponde aux questions du présent sans compromettre les capacités des générations futures à relever les défis auxquels, comme nous et à leur tour, elles seront inévitablement confrontées.

Les femmes ont toute leur place dans cette dynamique : elles ont déjà montré dans la politique, le secteur privé, le monde associatif et les cercles de recherche de ce continent leur capacité à faire bouger les lignes, avec les hommes et non contre eux.

L'Académie des sciences de France continuera d'accompagner cette quête de vérité scientifique et cette volonté de convaincre le corps social qui caractérisent les Académies des sciences réunies au sein du NASAC.

Participation of African Women in development of science and technology in Africa

Participation des femmes africaines au développement de la science et de la technologie en Afrique

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Abstract: The need for sustainable development in Africa is becoming a reality as evidenced by the NASAC international forum of 8-10 March, 2018, held in Julius Nyerere International Convention Centre in Dar es Salaam, Tanzania. The results emanating from the discussions and deliberations of the forum have thrown more light on the importance of involving women in development of science and technology in Africa, hence sustainable development. It is worthwhile noting that the forum emphasized the importance of women participation and inclusion in the national frameworks that aimed at fast-tracking the realization of sustainable development goals (SDGs) in Africa. The forum also stressed the need for women's contribution to Africa's political, social and economic development. It is now very obvious that the indispensable role played by science and technology in the development of any nation, particularly when sustainable development is required, cannot be overemphasized. This article emphasizes the fact that science and technology constitute the foundation for successful sustainable development. Sustainable development cannot be achieved where the societal, environmental and economic state of a nation is not in neutral equilibrium, that is, when they do not balance. This article will also emphasize the crucial role which women can play in the development of science and technology. The urgent need to get women to fully participate in development of science and technology on our continent is fully discussed. Challenges facing women's participation in development of Science and Technology are discussed and strategies for encouraging women's involvement in development are suggested. In conclusion, it is recommended that most of the strategies suggested should be implemented, so that adequate participation of women in sustainable development will be a reality and not a concept. It is evident from this article and from the forum discussions, that we have a series of wonderful ideas; we need now to work hard and put in a lot of efforts to ensure that implementation of these ideas will not elude us.

Résumé : La nécessité d'un développement durable en Afrique devient une réalité, comme en témoigne le forum international du NASAC qui s'est tenu du 8 au 10 mars 2018 au Centre de Congrès International "Julius Nyerere" à Dar es-Salaam, en Tanzanie. Les résultats des discussions et délibérations du forum

ont mis en lumière l'importance de la participation des femmes au développement de la science et de la technologie en Afrique, et donc au développement durable. Il convient de noter que le forum a souligné l'importance de la participation et de l'inclusion des femmes dans les cadres nationaux visant à accélérer la réalisation des objectifs de développement durable (ODD) en Afrique. Le forum a également souligné la nécessité de la contribution des femmes au développement politique, social et économique de l'Afrique. Il est aujourd'hui très évident que l'on ne saurait trop insister sur le rôle indispensable que jouent la science et la technologie dans le développement de toute nation, en particulier lorsqu'un développement durable est nécessaire. Cet article souligne le fait que la science et la technologie constituent le fondement d'un développement durable réussi. Le développement durable ne peut être atteint lorsque l'état social, environnemental et économique d'une nation n'est pas en équilibre neutre, c'est-à-dire lorsqu'il n'est pas équilibré. Cet article soulignera également le rôle crucial que les femmes peuvent jouer dans le développement de la science et de la technologie. Le besoin urgent d'amener les femmes à participer pleinement au développement de la science et de la technologie sur notre continent est pleinement discuté. Les défis auxquels se heurte la participation des femmes au développement de la science et de la technologie sont examinés et des stratégies visant à encourager la participation des femmes au développement sont proposées. En conclusion, il est recommandé de mettre en œuvre la plupart des stratégies suggérées, afin que la participation adéquate des femmes au développement durable soit une réalité et non un concept. Il ressort clairement de cet article et des discussions du forum que nous avons une série d'idées merveilleuses ; nous devons maintenant travailler dur et déployer beaucoup d'efforts pour faire en sorte que la mise en œuvre de ces idées ne nous échappe pas.

1 Introduction

The importance of science and technology (S&T) for development of any nation cannot be overemphasized, because science is the key to prosperity of a nation. It is virtually impossible to expect significant economic, social and environmental development without paying serious attention to Basic Science and Technology. Statistics have shown that women, if compared to men, are yet to distinguish themselves in this field of human endeavour. Results from research have proved that there is poor enrolment of women into science courses, both at tertiary and secondary levels. Counselling and awareness is required to get more women into this field of S&T. There is an urgent need to get women to fully participate in development of S&T in our nations. It is not without reason; it might interest us to note that if you train a woman, you have trained a nation. L'Oréal-UNESCO noted that "The world needs science but science needs women". Therefore we cannot do without Women in Science.

Furthermore, it is desperately important that ways, in which women should be encouraged to get involved in development of S&T and invariably in sustainable development, should be meticulously addressed. The works of (Okeke, 2004; Oxaal, 1997, Okeke, 2001, Okeke, 2014, Fuwape, *et al.*, 2008) have extensively addressed the issues of women's participation in development of S&T. Their works indicate that African women are yet to be fully involved in this exercise. They have since made several suggestions, strategies on how to remedy the situation, strategies recommended and challenges have been highlighted in their work, e.g. Samulewicz *et al.* (2012). Their work discussed barriers to pursuing careers in science, technology and engineering for women in the United Arab Emirates. They made similar suggestions of a way forward. On the other hand, the developed countries are not on the same level as the African continent, hence Etzkowitz *et al.* (2000) discussed the advancement of women in science and technology in Africa. Ceci *et al.* (2014) worked on women in academic sciences that resulted in changing the landscape. We, the African women, need to advance, and take up the challenges facing us so as to make it happen.

Sustainable development cannot be isolated from S&T; works of Okeke (2015), Isikwue and Okeke (2009), discussed details of the place of S&T in SD. Several authors have also discussed the burning issue of SD and S&T.

2 What is Science, Technology and Sustainable Development?

Science is an organized study of the universe and its environment through core subjects. It is the basis of technology and innovation.

Technology is the application of scientific knowledge for practical purposes for our comfort on earth.

Unfortunately, there is a very poor enrolment of women in the field of S&T at both secondary and tertiary levels of education, particularly in Physics. This is because, in the past, science optimized the male characteristics of competitiveness and aggressiveness among others, hence, science is regarded as a male, not a female subject. Women are yet to distinguish themselves in this area, this constitutes a serious problem facing African women's full participation in Science and Technology and to find of a woman scientist and a leader, the women scientists need to exist.

Sustainable Development

Sustainable development, SD, has a lot to do with higher science and technology, society, environment and economy; where the societal, environmental and economic state of a nation is balanced, then sustainable development is achieved.

The question is how do we build SD in Africa? We need a new set of values and a new mind set; women in science and technology will provide such values and new mind sets.

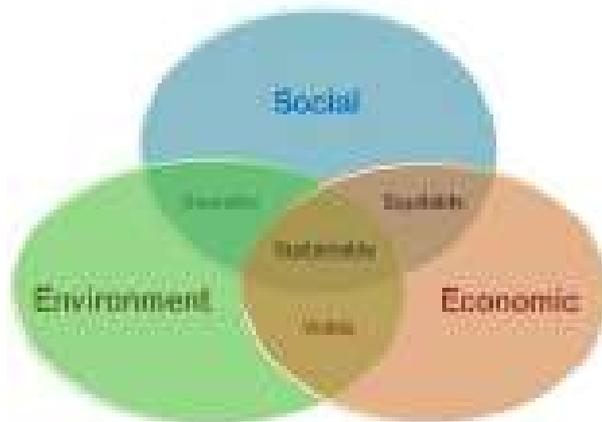


Figure 1 – Inter-relationship among economic, social and environmental state in a Nation

SD offers the possibility of a quality life, balanced by economic growth and ecological preservation. We must think of the future of each national culture and of humanity

as an entity in an integrated manner. SD will serve as an innovative tool in finding solutions to most problems of the world, not only of Africa, not just the physical and biological degradation of the environment, but also the social political and cultural dimensions. Fig 1 summarizes the state of any nation as considered when the economic, social and environmental states are involved. As can be seen from this figure, when the economic and environment states are stable, a viable condition is achieved. On the other hand, when social and economic states are stable, then, an equitable condition is achieved. Furthermore, when social and environmental conditions are stable, then consequently, a bearable condition is achieved. On the whole, when these three conditions are stable, it implies that the nation is in a neutral equilibrium; as such, sustainable development is completely achieved.

3 Factors that influence quick Sustainable Development

All sectors and stakeholders should consider the following factors that quicken the SD of a nation; culture, innovative research in basic science, science policy, capacity building, etc.

3.1 Culture

- Culture is very significant in local, regional and global SD
- It has to do with human appreciation of each other and natural resources around us
- The role and significance of culture are not considered in African schools
- Controversy exists as to the relationship between culture and SD
- Culture has been neglected in the past, but not now, there is an increase in ecological, economic and social challenges

Culture helps to make development much more relevant to the needs of the people.

3.2 Innovation

- Innovation is vital to meet challenges facing development
- Different innovations play different roles in the development process
- Building elaborate innovation capacities promotes growth
- Innovation drives economic growth and addresses socio-economic challenges such as health and poverty

Most effective Science and Technological innovations contribute to sustainable development (e.g. Information Communication Technology (ICT), Computer Education, Satellite communication and other areas of application in biology, physics, etc.

3.3 Basic research in Science and development

- Is the ability to unfold people's imagination and to engage in intensive efforts in fundamental scientific research
- To assert authority and self-reliance in carrying out research activities
- Most outstanding technology innovations are based on research into fundamental phenomena in the universe
- It requires, motivation, determination, perseverance, and patience, among others

3.4 Science Policy

- Governments of African countries should put in place a mechanism for coordinating Science and Technology, Research and Development efforts
- Women in Science must be fully involved in development of science policy
- Universities should be fully involved in the science policy making
- Countries in Africa should revise their science policy and Women in Science must be fully involved in this revision
- There should be great emphasis on need for coherent, systematic and comprehensive approaches to determining S&T programs and their implementation
- Special consideration must be given to domestic production in agriculture, rural development, energy and environment, health, food security etc.

4 Role of Women in Sustainable Development through Science and Technology

Lydia Makhubu, the then Vice-chancellor of the University of Swaziland, noted that "the failure of the international science and technology systems to fully engage women was depriving the development process of a valuable input." She equally emphasized that the role of women is notably significant in pursuing policies of sustainable development. Women's capabilities and contributions in the field of science have long been neglected.

Women are expected to play the role of teacher, mother, transmitter, innovator, moderator, achiever, etc., a diversified role in the family and society at large. This fact places women in the centre of the process of sustainable development, hence, in the science and technological issues.

As a teacher; she teaches both her children, and other people around her, the values of culture and norms of the society, which has to do with sustainable development. She is solely involved with the education of the children. Makhubu pointed out that women are the key transmitter of values and norms from generation to generation.

As innovator, she introduces new methods of handling domestic issues, particularly in preparation of meals, farming, etc., which further advances into integration of science

into culture consciously or unconsciously. As a mother, she takes care of the entire family including the husband, and yet she is strong enough to face other challenges. She motivates her children, husband and yet fulfils all obligations she is meant to. She sees to the keeping of the environment, economic and social issues, indirectly promoting the sustainable development. Women, strictly speaking, are already involved in sustainable development and Makhubu stressed that it is therefore a major need to reconsider the role of women in the scientific enterprise, Makhubu said. "It is only through this that we will be able to devise viable sustainable development strategies".

Elizabeth Mzumngaile, a research and development coordinator for Zambian Association of Women in Science and Technology said that women had a major role to play in building the successful economies of the future, as these will be those that can develop science and technology and apply it in a sustainable manner. "Women are major conduits in the transfer of knowledge from one generation to another". Therefore, the importance of the role women can play in sustainable development through science cannot be overemphasized.

5 Challenges facing Women in achieving sustainable development through S&T in Africa

The failure of governments to fully implement policies made by them, in development of Science and Technology, is one of the major challenges. Again, the laxity on the part of some women researchers and the lack of transparency contribute heavily to the challenges. There is no encouragement from government to researchers, hence, this results in the brain drain. Lack of funds and facilities for innovative research work is another serious challenge facing us, as well as lack of conducive atmosphere, dilapidated infrastructure, hence, productivity is affected, since "environment influences learning". Another serious issue is distractions by various family assignments, but for this, I have to make reference to a great scientist and a role model for modern female scientists : Marie Curie, who provided an impressive example of a woman that did it all. This is because she was able to make huge strides in her research, while managing her family. Her life style is relevant to us women in science today and we must emulate her. She said and I quote "Nothing in life is to be feared, it is only to be understood. Now is the time to understand more, so that we may fear less." I am sure the message is very clear and accepted by us.

Major Challenges include:

- Lack of confidence in ourselves and no focus
- Neglect of our Culture
- Not much Innovative research work
- Lack of fundamental basic research
- Poor Science Policy that does not involve participation of women in science.

Other Challenges include:

- Laxity and non-dedication of some women researchers to their work
- Lack of self-confidence
- Non-encouragement of dedicated and committed female researchers by some governments in Africa
- Lack of funds and facilities needed for innovative research work
- Non-conducive atmosphere such as lack of power, dilapidated infrastructure, etc., which results in low productivity
- No or poor financing of fundamental research, as it seems that there is no definite evidence for their immediate benefit and applications.
- Lack of non-collaborative research works both at national and international levels; we prefer to work in isolation.



Figure 2 – During a collaborative Research Meeting in Spain

6 Strategies for improving Participation of Women in Science and Technology in Africa.

- Young girls should be encouraged to develop an interest in Science and Technology when still young, hence, they will develop an interest in choosing careers in science and technology
- Society should encourage women to Science and Technology by accepting that a woman is an individual in her own right and with peculiar qualities of mind

- One necessary strategy is empowerment of women, employing ICT as a tool (Oxaal 1997).
- Women participation in Science and Technology workshops, conferences, seminars, exhibitions is very important
- Collaborative National and International research work, team work should be highly encouraged and sponsored. This is a basic and necessary tool for solving the problems challenging us. Fig 2 portrays one of such collaborative research meetings in Spain, which is today yielding positive results.
- Most developing countries do not involve women nor encourage them to participate in the development and innovations in Science and Technology.
- They should be encouraged to use results and products emanating from Research and Development in Science and Technology
- Women scientists in developing countries should participate in developments and innovations in science and technology.
- Applications emerging from technology and innovations should be made cheap enough and affordable to all.

7 Way forward

The existence of African Women in Science and their participation in development of S&T will be very effective and lead to a tremendous success:

- When most of the strategies suggested in this paper are implemented.
- When research will be more team work than individual efforts and collaborative research work will be encouraged.
- When research and activities in science are carried out using locally available resources that meet societal needs, only then will research appeal to our younger girls and boys as well.
- Science policy makers must involve our women scientist administrators when drawing up S&T policy.

Science Academies can look into Gender Mainstreaming Activities like:

Networking

Promote networking through:

- Synergies between different academies.
- Interaction could be done through the Internet because of the lack of funds.

- This could help enhance science education, because sharing experiences is very important
- Collaboration among Women should be strongly encouraged. This can help strengthen participation by women in science groups.

Women Committees under various Academies

- Academies should strive to form committees for women members in their respective academies to oversee the promotion of participation in Women in Science.
- Various committees will oversee the activities of Women in Science and struggle to get more qualified women in science; this is crucial because once this is achieved, then SD is guaranteed.

8 Conclusion

African Women in Science must take up challenges facing us and look towards full participation in development of S&T and hence their application to solving societal problems. This invariably will lead to SD, when the social, economic and environmental problems are solved through S&T, thereby achieving SD. Success in taking up challenges will attract more females to participate in S&T. We need to be open and have a team spirit in our work, no antagonistic attitude, no disunity, tribalism, etc. It is time that we fight to see all our ideas implemented, we have lofty ideas but implementation has always eluded us.

- *WE NEED IMPLEMENTATION!*
- *THEN, WE SHALL ACHIEVE OUR GOAL! OTHERWISE, WE FACE A DANGER!!*



**Laureate
L'Oréal -
UNESCO
Award for
Women in
Science,
2013**

Figure 3 – Prof Francisca Nneka Okeke as a Laureate of L'Oréal-UNESCO in Paris, 2013



Figure 4 – OWSD UNN Chapter First Conference in University of Nigeria, Nsukka

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Women are change-drivers in the world -
Women in science without borders
(WISWB), excellence and impact as a way
to change the world by science

*Les Femmes sont les moteurs du changement dans le
monde - Les femmes de science sans frontières -
changer le monde par la science*

Prof. Amal Amin Ibrahim Shendi

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Abstract: Girls and Women are change drivers in the world, but they need encouragement and recognition of their roles. The same with females in science, whether scientists or students, they will act efficiently with more inclusion and integration, which may happen with active collaboration with males in order to achieve sustainable development goals including SDG-5 of gender equality, specifically in scientific communities in order to be a role model for total society and the globe. WISWB is a new initiative for males and females to attain sustainable development goals with science-based on scientific excellence across borders of gender, culture and any other restrictions or considerations. Briefly, it is an initiative to develop societies with science.

Résumé : Les filles et les femmes sont des moteurs du changement dans le monde, mais elles ont besoin d'encouragement et de reconnaissance de leur rôle. Il en va de même pour les femmes dans le domaine des sciences, qu'elles soient scientifiques ou étudiantes, elles agiront efficacement avec plus d'inclusion et d'intégration, ce qui peut se produire avec une collaboration active avec les hommes afin d'atteindre les objectifs de développement durable, notamment le cinquième objectif stratégique de l'égalité des sexes, en particulier dans les communautés scientifiques afin de servir de modèle à la société et dans le monde. WISWB est une nouvelle initiative pour les hommes et les femmes afin d'atteindre des objectifs de développement durable fondés sur l'excellence scientifique au-delà des frontières du genre, de la culture et de toute autre restriction ou considération. En bref, il s'agit d'une initiative visant à développer les sociétés avec la science.

Marie Curie (famous female Nobel Laureate in 1903 and in 1911) said that “*Life is not easy for any of us, but what of that ? We must have perseverance and above all confidence in ourselves. We must believe that we are gifted for something and that this thing must be attained*”.

I mentioned this statement in celebration of the first physics Nobel Laureate in 2018, 55 years after the last one, in addition to another Laureate, in chemistry, 9 years after the last award. On this occasion, I would like to say that female scientists deserve more appreciation with respect to their numbers and efforts that have been growing across university laboratories and research institutes for years, without much recognition. Even though, if we look deeply, we may find now that females are key players in all aspects of life generally and in scientific fields specifically, including in research teams in several specialties. However, there is always little attention or focus on their roles which made me focus on the statement by Kathy Calvin, the United Nations foundation president and CEO: “Girls are one of the most powerful forces for change in the world: when their rights are recognized, their needs are met, and their voices are heard, they drive positive change in their families, their communities, and the world”.

Indeed, that explains the role of girls or women in the progress of their societies and consequently of the World. The girls include daughters, wives, sisters and colleagues who may represent half of the societies or more. So, how could we ignore the role of almost 50 % or more of the main population in forming decisions or achieving significant progress? Practically, they need only good preparation and the right qualifications to drive the change in their societies with full preservation of their rights as equal human partners of their male counterparts.

Literally, that situation should be extended to the sustainable development goals which were specified by the UN as the main principles of human rights. Obviously, all goals may be affected by the contributions by women whether as family members or as active citizens in the society. Primarily, women are the ones most affected by bad actions, circumstances and disasters such as poverty, hunger, insufficient energy or clean water, or lack of education or medical care, whether as mothers or active family members, or sometimes as the main support of their families. However, their contribution is not always recognized or appreciated enough to give them the consideration as qualified persons able to efficiently serve their societies and raise their children in a professional way. Accordingly, women must be effectively empowered in order to improve their qualifications in all fields, including science, to give them a greater impact on their life prospects.

In this context, the situation for women in science is shocking since, according to a UNESCO report [6], only less than 30 % of all researchers are women with variable percentages worldwide, ranging between 30.4 for sub-Saharan Africa to 32.2 for North America and 39.9 % for the Arab states. Surprisingly, the dominant female contribution is obvious among majors in life sciences such as medicine and nursing compared to remarkably low percentages in engineering, math and natural sciences where the number of males surpasses that of females. Additionally, the number of women in higher education and research decreases gradually and drastically from the

undergraduate stages to the postgraduate ones according to a concept called “leaky pipeline” (fig. 1). The number of female students may reach 50 % at the university level concentrating on special majors in life sciences more than natural sciences or engineering. Paradoxically, the number decreases at Ph.D. levels and drops at higher levels reaching 6 % with respect to leadership, higher levels of academia and to the number of total members of national academies. Also, the number decreases with increasing family commitments such as marriage or having children.

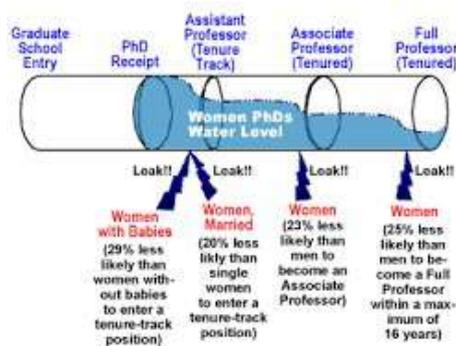


Figure 1 – Leaks in the academic pipeline for women [7]

Moreover, the number of female Nobel Laureates is lower than that of males specifically in physical and biological sciences i.e., 3 in physics, 5 in chemistry and 12 in medicine and physiology compared to 111, 109 and 108, respectively for the total numbers..

On the other hand, the Elsevier report [2] highlighted the females’ scientific achievements including 5.5 million papers and 27.3 million authorships, where it was found that males produced 70 % of the total publications with 66 % first authorships even in the developed countries. Only 13 % of highly cited authors in 2014 were women, but the number varied by discipline from 3.7 % in engineering to 31 % in social sciences. Generally, women are underrepresented with respect to innovations where the global share of women as inventors in PCT (the patent cooperation treaty) applications was only 14 % in 2011-2015. The percentage of patents with at least one woman among the inventors was 28 % in 2011-2015.

Indeed, a real and deep analysis of the situation reveals several causes for the underrepresentation of women in science such as societal commitments as family member, whether as mothers or as sponsors. Also, a bad and unfavourable view by collaborators of the work done by women in research or activities may help to explain that low percentage of the female contribution in scientific communities. Sometimes, male researchers see the female contributions as extra burdens, not really helpful in achieving the required and planned scientific goals in projects or routine lab or scientific work, as we have seen in remarks by Tim Hunt, winner of the 2001 Nobel prize in physiology/medicine, who recommended that scientists should work in gender-segregated labs and he said that “*Let me tell you about my trouble with girls ... three*

things happen when they are in the lab ... You fall in love with them, they fall in love with you and when you criticize them, they cry."

Additionally, in some cases, stereotypes or racism identify some fields as specifically for women more than for men, as was obvious in recent remarks (2018) by the Italian researcher (Prof Alessandro Strumia) of Pisa University during a workshop on "High Energy Theory and Gender" at CERN who said that "*Physics is invented and built by men, it's not by invitation*" and "*male scientists were being discriminated against because of ideology rather than merit*".

Also, we cannot deny the role of educational programs which are sometimes designed to prepare women as future mothers and for special jobs rather than to become future healthy citizens who can freely choose their way. Therefore, the systems do not help to support the self-confidence of females from childhood. Additionally, females themselves sometimes help to ignore their rights by not claiming them or chasing their dreams and accepting their situation with no further steps or efforts to change or to develop themselves. Also, in some cases, they are afraid that if society looks on them as strong independent individuals, they will not find a husband or form a family. Unfortunately, sometimes females themselves do not support each other in the work place and fail to build successful business networks to support their careers at their workplaces as is the case of their male partners. That happens in spite of the natural gift of women to communicate with others outside their professional careers as, for example, in scientific communities whether in academia or research.

For all these reasons, several programs were built to empower and encourage women in scientific communities to increase their participation and to help them to achieve scientific progress or development. But, in spite of all these efforts, we still have the same situation which brings us to the question, *what more should we do?* Or in other words, is there anything missing which prevents us from attaining our goal and solving all problems related to women in science?

Those questions may be answered if we replace the expression "empowerment of women in science" by "gender equality" as the fifth sustainable development goal to enrich diversity in scientific communities, where we may share the problem of women in science with their male counterparts who may help to find real solutions and answers to these questions. Briefly, we cannot ignore the role of men in solving the problems related to the subject of women in science where it is a responsibility shared between males and females.

"We need all hands on deck, and that means clearing hurdles for women and girls as they navigate careers in science, technology, engineering and math", Michelle Obama (2011).

Therefore, as a woman scientist, I consider that it is time to have effective integrated relations and cooperation with male colleagues where most successful women scientists may find some help from men whether as family members, father, brother or husband, or in the workplace from colleagues and leaders. So, I have made several efforts to empower women in science through the movement of young academies where I have co-founded both the global young academy and the Egyptian young academy to empower

young and mid-career scientists, including women, as main players in the movement away from any partiality. I have established a women-in-science working group in the Global Young Academy (GYA) and have become a member of several mentoring programs where I have learned that part of the problems of women in science lies in the lack of role models and success stories, which may encourage and guide the new generations to give them inspiration and self-motivation for a better future, which may help to convince them to complete the long road through post-graduate studies and then higher degrees.



Figure 2 – Logo of WISWB

Lastly, from my experience, I have concluded that a new movement should be established such as active model for cooperation between males and females on a scientific basis away from any other considerations and concerned only with scientific merit and excellence, taking science as the common language.

Consequently, in 2016, I took the first steps to found and establish the new movement for women in science without borders (WISWB) whose main basis is to encourage gender equality as sustainable development goal number 5 (i.e. SDG-5) by increasing cooperation between women and men inside scientific communities as a model for the whole society to achieve sustainable development, specifically in developing countries. WISWB's main principle is: *"It is not a matter of women or men scientists, but it is a matter of increasing cooperation between both sides for the sake of sustainable development"*.

Meanwhile, the main aspect for WISWB is to hold an annual gathering to collect excellent contributions based on cutting-edge research presented by both female and male scientists to be displayed and discussed on a free basis to open future cooperation in support of scientific research and to increase the impact of science on society. WISWB began with STEM fields (science, technology, engineering, math, including medicine and related social studies). The first meeting was held in 2017 at Cairo, Egypt, under the patronage and supervision of several reputable organizations such as Egyptian young and senior academies (organizers), the Welcome trust, Elsevier, ISC, EU, L'Oréal, GYA, etc.



Figure 3 – WISWB, 2017, Egypt.

Students' competition, WISWB 2017

WISWB is a free-of-charge meeting to allow all categories interested in science including scientists (senior or young), NGOs, Industry, Entrepreneurs, policy makers, stakeholders, practitioners, etc., to attend according to the concept of “science for all” and as a good opportunity to increase science literacy and the impact of science on society. Surprisingly, the number of applicants was very high with a good male-to-female ratio (27:73 %) in all disciplines of STEM with respect to the first conference and with a good distribution from younger generations to seniors (85:15 %) from all academic and educational levels.



Figure 4 – WISWB 2018 South Africa

Student competitions were held during that conference in six fields related to sustainable development goals i.e., food, water, energy, environment, education and health. The main aim of the students' competitions was to increase the awareness of sustainable development goals among younger generations in addition to building and increasing a new culture of cooperation among them.

It was obvious that the idea of WISWB was inspirational since one of the 2017 Conference attendees (Prof. Sonali Das) offered to transfer the idea and organize the WISWB 2018 conference in South Africa, where the idea expanded to include establishment of a sustainable movement of WISWB for males and females based on scientific merit and dialogue between all partners inside scientific communities with a logo of "science for sustainable development".

In 2019, the movement has held its conference in Egypt again, in its new image as a complete international forum for women in science open to males and females, with the theme of "science diplomacy for sustainable development".

The conference was co-organized with the Arab science and technology foundation (ASTF) and sponsored by Sanofi, Johnson & Johnson, etc., with its broad name as "*world forum for women in science*". Several organizations participated at the conference as GYA, JST, ISC, TWAS-TYAN, NEF, Brazilian Academy of sciences, etc.).



Figure 5 – Science Diplomacy workshop (World forum for women in science), WISWB, Egypt, 2019

New initiatives to support new generations accompanied the main conference where capacity-building by training on science diplomacy was provided for young scientists (males or females) from developing countries to equip them with important skills to act as science diplomats, a future necessity for international cooperation. Additionally, students' competitions were organized on sustainable development goals as previously planned. Several sessions were dedicated to display problem-based ideas to solve real existing problems. Generally, the conference is always run *via* five main tracks as: biology & medicine & pharmacy, materials & engineering & energy, Agriculture & veterinary & food, Environment, gender issues & sustainable development & science

diplomacy/science advice. The plan is to transform that movement into a complete community development-based experience to introduce science to the entire society.

Luckily, my contributions with respect to young scientists and women in science and other issues have been recognized in several publications such as the NASAC book of women in science, relating inspiring stories from Africa.



Figure 6 – Students' competition (World forum for women in science), WISWB, 2019

Finally, I dream of spreading education which is the only way to empower not only girls but humanity as a whole, and the only way to change the world for the better, as Nelson Mandela said: "*Education is the most powerful weapon which you can use to change the world*". Indeed, providing education for every child whether girl or boy is a noble and ideal target, but, it is time to focus on the quality of education as the real engine of development in order to train the new generation to think and to develop their societies in the right way, as Einstein said: "*Education is not the learning of facts, but the training of the mind to think*". Once we have these new well-educated children with their bright minds, we will no longer need to speak of conflicts or human rights or gender equality. We will have a better world to live in and to produce together for the sake of humanity. Actually, this is my dream.

Acknowledgment

I am very grateful for NASAC for giving me the opportunity to share my point of view through the current endeavour. I would like to extend my deep gratitude to everyone who helped me through my career, especially my lovely family including my husband and daughters. Special thanks go to Egyptian senior and young academics, to the Arab science and technology foundation (ASTF), to BUE, to all sponsors, presenters, contributors, whether seniors or young and others. Many thanks must be extended to Prof. Dr. Mahmoud Sakr, Prof. Dr. Bahaa Elgendy, Dr. Merit Rostom, Prof. Dr. Sonali Das, Prof. Dr. Abdalla Alnajjar, Prof. Dr. Ghada Amer, Prof. Dr. Amal Kasry, all sponsors including Sanofi, Wellcome trust, Johnson & Johnson, L'Oreal, Elsevier, GYA, ISC, EU, NEF, TWAS-TYAN, Brazilian Academy of sciences, JST and others who have contributed to the success of WISWB. Without their help, valuable contribution and great support, the movement of WISWB would not flourish...

Abbreviations

ASRT: Egyptian academy for scientific research and technology

ASTF: Arab science and technology foundation

BUE: British University in Egypt

EYAS: Egyptian Young Academy

GYA: Global Young Academy

ISC: International science council

JST: Japan science and technology agency

NEF: Next Einstein Forum

NGOs: Non- governmental organizations

PCT: the patent cooperation treaty

TWAS-TYAN: TWAS network for young scientists

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PART TWO: WOMEN & DEVELOPMENT

Local & national roles of women in development: Ghana's experience

Rôle local et national des femmes dans le développement : l'expérience du Ghana

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Abstract: The presentation focused on the roles of women in the Ghanaian society as well as the country's efforts in women's development. Historically, the role of women in Ghana has been acknowledged as ensuring the society's stability and progress from the household level to national level, and this has been integrated into all of the country's sectors in line with global developments. Over the years, Ghana has adopted international laws and initiatives that seek to protect and strengthen the rights of women. Successive Ghanaian Governments have adopted and incorporated relevant provisions of the international laws, treaties, conventions and regional frameworks into legislations, policies and taken action towards placement of women into decision-making positions as well as their economic empowerment to bridge the gender gap. Despite this, there are still some challenges related to unpaid labour, non-child friendly learning institutions and unfriendly work places, subtle discrimination, the balance between work and home commitments and lack of mentorship due to limited opportunities. Therefore, much more is required to improve the plight of the girl child. Teachers, and indeed all stakeholders, are called upon to follow-up on girls that missed school as well as institute measures to mitigate against other conditions or factors that perpetuate the plight of girls as they grow and women to optimize their status and contribution to development.

Résumé : La présentation s'est concentrée sur le rôle des femmes dans la société ghanéenne ainsi que sur les efforts du pays dans le développement des femmes. Historiquement, le rôle des femmes au Ghana a été reconnu comme assurant la stabilité et le progrès de la société du niveau du ménage au niveau national, et ceci a été intégré dans tous les secteurs du pays en fonction des développements mondiaux. Au fil des ans, le Ghana a adopté des lois et des initiatives internationales visant à protéger et à renforcer les droits des femmes. Les gouvernements ghanéens successifs ont adopté et incorporé les dispositions pertinentes des lois, traités, conventions et cadres régionaux ou internationaux dans leurs législations et politiques et ont pris des mesures pour placer les femmes aux postes de décision et leur donner les moyens économiques de combler l'écart entre les sexes. Malgré cela, il y a encore quelques défis liés au travail non rémunéré, aux institutions d'apprentissage non amicales avec les enfants et aux lieux de travail hostiles, à la discrimination subtile, à l'équilibre entre les engagements professionnels et familiaux et au manque de mentorat en raison des opportunités limitées. Il faut donc faire beaucoup plus pour améliorer le sort des petites filles. Les enseignants, et en fait toutes les parties prenantes, sont appelés à assurer le suivi des filles qui n'ont pas été scolarisées et à prendre des mesures pour atténuer les autres conditions ou facteurs qui perpétuent le

sort des filles pendant leur croissance et des femmes pour optimiser leur statut et leur contribution au développement.

1 Background Information on Ghana

Ghana is a country in West Africa which gained independence from British Colonial rule on the 6th of March 1957. The country is divided into ten Administrative Regions and two hundred and sixteen Districts. The estimated population (January 2017) was about twenty eight million with about one million live births [1] and a quarter of a million deaths; a net migration of close to eleven thousand people and a male to female population sex ratio 1.036 i.e. 1,036 males per 1,000 females. Life expectancy at birth is 61 years (for both sexes): 59.8 years for males and 62.3 years for females, respectively. The infant mortality rate is 50 per 1000 live births [1] and the maternal mortality ratio (MMR) in 2015 was estimated at 319 per 100,000 live births [2]. The MDG targets for infant and maternal health were not attained. The doctor-to-population ratio and midwife to women in fertile age ratios are 1:8481 and 1:1023 respectively.

Ghana has a rich and revered culture characterized by a strong traditional rule system – The institution of Chieftaincy, which was in existence prior to independence, remains strong and carries on with little interference despite constitutional democratic rule. There are over one hundred ethnic groups and languages. The largest are Akan, Moshi-Dagbani, Ewe, and Ga. The Akans are the largest tribe and one of the few societies in West Africa where lineage is traced through the mother and maternal ancestors. The family unit is revered and age is respected [3].

Traditionally, the roles of women in nurturing and maintaining of peace and stability, from the household level to national level, as well as custodians of culture are valued. Consultations with the *'old woman'* on issues of family and community concerns are common practice in most Ghanaian cultures. For example, in matrilineal inheritance 'queen mothers' (traditional women leaders) are the kingmakers in nomination of their sons and other male members of royal families to occupy the Traditional Stools and in training of the girl child. In other social settings, influential women leaders such as the *'Magajiyas'* in Northern Ghana lead and sustain several development efforts in their communities. In domestic affairs, decisions on meals and management of other household resources, particularly feeding, is by women. In the markets 'Food Item Queens' organize their groups to manage prices of food items and improve their general working conditions and welfare.

Women and girls are significant contributors to society in terms of economic development, reproduction and nurturing and support of families, households and communities, and by extension also acknowledged as ensuring the society's stability and progress. However, the vulnerability of women, girls and children biologically, socially and economically has rightly led to various global laws to address these issues of vulnerability and inequities in opportunities, to which Ghana has been party and or subscribes to and duly reflected in Ghana's Constitution (1992). Notable among these Instruments of International law concerning women are:

The Universal Declaration of Human Rights (1948); Convention on the Political Rights of Women (1952); International Covenant on Civil and Political Rights (1966); International Covenant on Economic, Social and Cultural Rights (1966); Declaration on the Elimination of All Forms of Discrimination against Women (1967); Declaration on the Protection of Women and Children in Emergency and Armed Conflict (1974); Convention on the Elimination of All Forms of Discrimination against Women (1979); Declaration on the Elimination of Violence against Women (1993); Inter-American Convention for the Prevention, Punishment and Elimination of Violence against Women (Belém do Pará Convention) (1995); Universal Declaration on Democracy (1997); Optional Protocol to the Convention on the Elimination of All Forms of Discrimination against Women [4].

Successive governments of Ghana have adopted and incorporated the relevant provisions of the international laws, treaties or conventions and regional frameworks into national legislations and policies, to empower women and bridge the gap between men and women: examples being: increase in proportion of women in decision-making positions and in Justice, The Demographic Dividend strategic Plan and Access to Financial assistance in Industry.

2 Women in Development & Gender in Development Approaches: Ghana's Response

The Women in development (WID) approach emanated from the realization in the 1970s that like the poor, women were marginal and often not factored into most development assistance programmes of large donors in developing countries, calling for the need to re-strategize. As a result, the United Nations in 1972 designated 1975 as International Women's Year, highlighting the need to involve women in issues of economic development [5]. Therefore the WID approach has been implemented by integrating women's issues into development assistance policies and programmes of developing countries. However, these were based mainly on westernized models which were not in the same context in the developed countries resulting in slow progress and sub-optimal impact [3]. After decades of implementation with little progress, and beginning in the 1980's, rather than dwelling only on women's issues, appreciation and acknowledgement of the complex relationships between males and females led to gender analysis and therefore broader perspectives and a more accurate contextualization in development policies and programmes of major donors was referred to as the gender and development (GAD) approach. International laws, treaties or conventions and regional frameworks have been formulated into national legislations and policies, to empower women and bridge the gap between men and women.

In Ghana, these historical trends have been realized and implemented resulting currently in mainstreaming gender into the national development agenda upheld by successive governments. In the 1970s the Women and Development approach resulted in the establishment of the National Council on Women and Development (NCWD) and the Ghana National Commission on Children (GNCC) to ensure inclusion and

implementation of women's and children's interests in national development. The NCWD was established in 1975 as Ghana's response to a UN resolution that called on member states to establish appropriate government machinery to accelerate the integration of women in development and the elimination of discrimination against women. This was Ghana's first machinery to ensure full integration of the WID. The Council examined how customary beliefs and practices affected the advancement of women in the educational, political and economic fields reporting to government and coordinating and fostering collaboration between national and international levels. The initial achievements included laws on intestate succession, and criminalization of harmful cultural and traditional practices such as Female Genital Mutilation (FGM) and ritual servitude 'Trokosi' in the 1990s [4].

In the 1980's and thereafter, GAD implementation has culminated in the creation of sector Ministries. In 2001 the first Ministry of Women's and Children's Affairs (MoWAC) was established by the elected government with Departments of Women and Departments of Children among others. Following a change in government in 2013, restructuring led to the current Ministry of Gender, Children and Social Protection; this time with the Department of Social Welfare moving from the Ministry of Employment and Social Welfare to be a part of this Ministry which addresses gender equality, equity and empowerment of women for national development; and have co-sponsored the intestate succession and property rights of spouses bills, the passage of the Affirmative Action Bill and National Child Protection Policy which were approved by Cabinet in February, 2015 [6].

The 1990's focused on Rights. Prominent was Sexual and Reproductive Health and Rights from the landmark International Conference on Population and Development (ICPD), held in Cairo, Egypt in 1994 and the Beijing Conference in 1995.

3 Ghana's Constitution with reference to Appointments to Public Office

Ghana's 1992 Constitution guarantees women's equality with their male counterparts based on the principle that males and females are equal before the law. Examples include Article 17 of Ghana's 1992 Constitution states: in order to ensure equal treatment and non-discrimination, provides that all persons shall be equal before the law. Subsection 2 provides that no one shall be discriminated upon on grounds of gender, race, colour and social or economic status. Also, in the Constitution, the state is obliged to take measures to achieve reasonable regional and gender balance in recruitment and appointment to public offices. Article 17(4) also provides that nothing shall prevent Parliament from enacting laws that are necessary to provide for programmes aimed at redressing social, economic or educational imbalance in society.

Apart from the Constitution, specific policies are in place to protect the rights of women seeking employment in the Public sector. These are based on the underlying principle of equality of men and women before the law and imply equality of reward for work of the same kind performed by both men and women alike. Thus, legally, women have a right to equal place with men in decision-making bodies such as in

boardrooms, Parliament and executive councils. However, in practice, the position is not that simple. There is still a wide gap between theory and practice [7].

In Ghana's 15-year National Platform for Action for the implementation of the Beijing platform, power sharing and decision-making was chosen as one of the critical areas of concern. The government has formulated national initiatives with specified gender considerations to address the low representation of women in Parliament.

In December 1998, the Cabinet issued a policy statement on affirmative action, pledging 40 per cent representation of women in all decision-making bodies. It requested the Electoral Commission to encourage all political parties to nominate more women parliamentary candidates so that they constitute 40 per cent of nominated candidates for Parliament; another directive was issued to the Local Government to ensure that women constituted 30 per cent of government appointees to District Assemblies.

A National Gender and Children Policy of 2004 was formulated with an overall goal of mainstreaming gender concerns in the national development process, to improve, among other things, the participation of women in decision-making bodies in Ghana. The specific objective was to redress imbalances, which arise from existing gender inequalities through policy formulation, review, legal reforms and enforcement of existing legislation.

The Women's Manifesto [8], a non-partisan political document developed by an inclusive consultation among Ghanaian women (2004), sets out the critical issues of concern to women in Ghana and makes demands for addressing them. The document recognises that in spite of the pivotal role played by women within the family and community, they do not occupy key decision-making positions in political life and are relegated to the background as far as public decision-making is concerned.

The implementation of the legislative and policy initiatives over the past four decades have yielded appreciable achievements in the empowerment of women in the public service of Ghana. Significant among these are the appointments of women to head important governance and other public service institutions, including the Supreme Court of Ghana, the Public Services Commission, the National Commission on Civic Education, the Office of Speaker of Parliament, the Commission on Human Rights and Administrative Justice, Ghana AIDS Commission, Controller and Accountant General's Department, National Development Planning Commission, Ghana Insurance Commission, the Ghana Prisons Service, Ghana Investment Promotion Council and Ghana Statistical Service. The numbers and proportions of women in the public sector vary by categories as political appointments change with changing governments and parliamentary and other local elections.

In spite of these laudable achievements, there are still a number of serious challenges militating against the empowerment of women in Ghana's public service [5]. Discrimination of all forms prevails. The literature makes reference to several factors which are very real, ranging from social-cultural discrimination, 'glass ceiling' effects, mechanisms of recruitment and promotion, stereotyping, limited access to resource and lack of adequate education; all these factors constrain women's advancement and effective participation in the public service of Ghana.

In most African traditions, communities are gender-blind and largely silent on the participation of women at the forefront of issues and may even deliberately play down women's role in society. In Ghana too, discriminatory socio-cultural practices consciously or unconsciously practiced by men against women exist. Generally, Ghana operates a patriarchal system, which gives dominance to men in authority and decision-making in and outside the home, where women's participation in public affairs is perceived as abnormal and where motherhood is a crucial factor that excludes women from public work.

Psychologists propose that careers in public organisations are perceived as synonymous with male characteristics. Women are perceived by natural design and socialisation to lack motivation to achieve in male careers. It is further explained that women lack the opportunities for training in vocational skills, are burdened with family responsibilities as mothers and wives and there is generally strong negative views about their ability to assume leadership positions. Also the multiple roles played by women which include their duties as caretakers of homes, mothers and office workers, tend to be conflicting and thus divide their attention in different directions with negative consequences on performance at work and promotion. Related to these challenges is the absence of child-care facilities at work places for women employees, which is a common deterrent for women to opt for formal employment or move up the career ladder in public administrative positions, while those employed may have opportunities to take care of their children while at work. Many women have to take their children to day-care centres and schools often far from their workplaces, often resulting in high rate of absenteeism and low productivity among women employees.

Moreover, women lack strong social networks and mentors among themselves, to encourage each other to seek top positions in public service. Women at the top fall into the minority and in most cases lack support, and are therefore forced to 'toe the line'.

4 The roles of women in society

Throughout history, the central role of women in society has ensured the stability, progress and long-term development of nations. The quality of the population depends largely on the nurturing of the children often referred to as 'the future leaders'. The household is the primary producer of health. An empowered (educated, economically sound) woman impacts positively on the health and survival of her family! The proverb "*Charity begins at home!*" is relevant. Ghanaian leaders recognize the role of women; examples are in the following statements which have international approval: "*If you educate a man, you educate an individual. But if you educate a woman, you educate a whole nation!*" by Dr. Kwegyir Aggrey, renowned Ghanaian Educationist (1875–1927) while advocating for female education. This was also affirmed by Osagyefo Dr. Kwame Nkrumah (First President of Ghana: 1957-1966)

The former United Nations Secretary-General Kofi Annan, in 2002 stated: "*The Millennium Development Goals, particularly the eradication of extreme poverty and hunger, cannot be achieved if questions of population and reproductive health are not squarely addressed. And that means stronger efforts to promote women's rights, and*

greater investment in education and health, including reproductive health and family planning.”

The roles of Women in the local Ghanaian context are many. These include Mothers; Care givers of children & aged; Homemakers; Custodians of culture & Tradition; Traditional Rulers (Queen Mothers); Teachers; Farmers, Nutritionists & Cooks; Entrepreneurs; Sometimes Heads of Households; Peace Makers; Traders; Pastors and Evangelists, Organizers of home and community projects and activities; Assembly Women, even Warriors! – a historical example is Nana Yaa Asantewaa, Queen of Edweso, Ashanti region of Ghana was the principal inspiration of the Asante-British War, known as 'War of the Golden Stool' (1900 -01) [9] also known as the Yaa Asantewaa War, to the admiration of all. However, while her leadership has been acknowledged in the scholarly literature, her precise role in the war had not been examined until the centennial lectures. This oversight was remedied by the eminent Ghanaian historian, Professor Emeritus A. Adu Boahen, in his account written for the centenary of the war. *“With their king and many leading chiefs already in exile, the Asante faced a new crisis in 1900 with the British Governor’s demands for additional tribute and the symbolic Golden Stool. It was Nana Yaa Asantewaa who rallied Asante’s resistance with her fiery and provocative speeches and gender-conscious challenges”*.

A columnist in 2009 cites from the literatures that in Ghana 65% of women are solely responsible for their children’s daily nutrition and are increasingly heading households (40% in 1970). While Ghanaian women have traditionally occupied key positions alongside men in the production of goods and services for subsistence and for the market, as is often the case, the actual contributions women make to the economy have been underestimated or missing from national accounts and are often not considered as work [10].

At Community level, Queen Mothers and other Prominent Women: the role of “Magadzas”, in health promotion, community women mobilisation. Examples are: In the era of 31st December Women’s Movement, Headed by a Former First Lady had “susu groups” i.e. local financial contribution groups, gari processing factories, day nurseries (provided economic empowerment); support CHPS (Community-based Health Planning and Services) activities; Media Support programmes e.g. Connection with Women in the Diaspora etc. Traditionally Queen mothers have played the role of mother figures and provided support in development at community and national levels and are currently ‘Champions’ of several causes in Maternal and Child Health Programmes.

Very Notable in Ghana also is the role played by our first ladies – real role models and mothers of our nation. They have supported very worthy causes; notable among them are maternal and child health campaigns – Reduction of maternal and child mortality, Family Planning Campaigns, Immunization, Health Systems Strengthening efforts -Community-Based Health & Planning Strategy (CHPS), Primary care services towards Universal Health, Infrastructure Maternal and Newborn Centre, Parents Hostel for Childhood Cancers, Cervical Cancer Vaccine Pilot Project, Cervical Cancer Regional Conference, Women’s empowerment strategies. Also at Regional, Continental

and Global scales, Actions such as the African Union Campaign on Acceleration of Reduction of Maternal Mortality and Morbidity in Africa (CARMMA) in Ghana.

Traditional Leaders, Entrepreneurs and private sector stakeholders, Ministers of State, Members of Parliament, Public Servants, Development and Implementing Partners, Media Practitioners, teachers, women from all spheres of life playing leadership roles wherever they are and contributing to nation building. We pay tribute to them all as well as to men who have truly and passionately championed the cause of women and children (including boys)!

5 The Role of Men

The Role of men in appreciating and supporting the development of women is very important and has to be nurtured from early childhood. There should be structures in place and programmes and strategies that foster a proper understanding of gender issues and how the capacity and full potential of every individual, whether male or female, young or old, can be realized in a reassuring manner, non-threatening/confrontational manner, which benefits both sexes and all ages and programmed for the efforts and positive outcomes and impact to be sustained. This fits in the GAD approach.

6 Conclusion

Women's contributions to the socio-economic and political development of Ghana and other countries cannot be over-emphasized. Women have played and continue to play leading roles in the development of nations. The roles and contributions of women and girls in Local, National and Global progress towards development is crucial with many similarities and few differences across cultures and countries. It is the responsibility of all to ensure that gender inequities are addressed for global sustainable development. Policy Makers at all levels must highlight the value of women's participation and inclusion in local, national and international frameworks for realisation of the SDGs, particularly SDG5 on 'Gender Equality'. These were well expressed in all sessions and in the Conference Declaration.

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Rôle des femmes dans le développement local

Role of women in local development

Ini I Damien/Youl

Présidente de l'Association pour la Promotion Féminine de Gaoua

Résumé : On présente, dans ce bref article, l'activité de l'Association pour la Promotion Féminine de Gaoua (Burkina Faso) qui a pour but de promouvoir le rôle des femmes dans l'accomplissement de leurs tâches majeures pour atteindre les objectifs de développement durable qu'elles se sont fixés. Cela s'est traduit par la réalisation d'activités concrètes sur plusieurs volets : économique, social, culturel, environnemental, qui sont brièvement décrites.

Abstract: This short article presents the activity of the Association pour la Promotion Féminine de Gaoua (Burkina Faso), which aims to promote the role of women in carrying out their major tasks to achieve the sustainable development objectives they have set themselves. This has resulted in the implementation of concrete activities on several components: economic, social, cultural, environmental, which are briefly described.

1 Introduction

Malgré les efforts des pays africains et l'engagement de la communauté internationale à mettre fin aux discriminations et autres formes de violences contre les femmes dans le monde, celles-ci continuent de faire l'objet de violences liées à leur statut de femmes.

Le Burkina Faso est un pays sahélien situé en Afrique de l'Ouest. La population est estimée à environ 19 millions d'habitants en 2016, dont 52% de femmes, 47% âgés de moins de 15 ans, 67% âgés de moins de 25 ans et 33% de jeunes dans la tranche d'âges 15-34 ans (source PNDS).

Sa superficie est de 274 000 km². Le pays est divisé en 13 régions, en 45 provinces, et en plus de 351 communes. Le Burkina Faso s'est engagé à lutter contre les violations des droits des femmes afin de leur garantir leur épanouissement en tant qu'êtres humains

à part entière. Il a ratifié les textes sous-régionaux et internationaux, dont le plus important est l'élimination de toute forme de discrimination à l'égard des femmes.

En dépit de cette volonté politique de la part du Burkina Faso et des autres Etats Africains, certains maux persistent. En Afrique, les maladies, tuent, mais l'ignorance tue encore plus et freine les tentatives de développement initiés par les acteurs avertis.

L'Association pour la Promotion Féminine de Gaoua (APFG) intervient dans la région du Sud-Ouest du Burkina Faso. La population de cette région croit d'environ 2,5% par an, elle doit compter aujourd'hui entre 800 000 et 900 000 habitants, dont une majorité de femmes. La région compte 4 provinces, 28 communes et 1084 villages.

2 Les atouts

Il faut noter que les organisations de la société civile, les partenaires techniques et financiers contribuent véritablement à lever les défis au travers des actions de sensibilisation, de plaidoyer pour un développement socioéconomique et culturel des femmes et de filles.

Ainsi, l'Association APFG, convaincue que les femmes et les jeunes filles ont des intelligences latentes, considère qu'elles seront capables de faire évoluer les choses, si l'on trouve la formule leur permettant de prendre leur destin en main. L'APFG a donc pris le taureau par les cornes.

3 L'organisation

Cela s'est traduit par l'organisation de l'activité des femmes autour de leurs préoccupations majeures et par son utilisation comme plate-forme pour atteindre les objectifs qu'elles se sont fixés. Cela comprend la réalisation d'activités concrètes sur plusieurs volets : économique, social, culturel, environnemental. Les thèmes transversaux ont couronné le tout et cela a permis d'atteindre des résultats très satisfaisants. Ainsi on peut noter :

Sur le plan économique : l'APFG a mis l'accent sur le développement endogène. La transformation et la valorisation des produits locaux tels les unités de beurre de karité en savon et en pommade, les boissons locales, la farine enrichie pour les enfants, le *soumbala*.

Sur le plan social : la création d'une structure de crédit de proximité qui répond aux besoins des femmes et jeunes filles :

- L'octroi de crédit aux femmes qui touche plus de 1000 femmes par an
- La solidarité orientée par le soutien des membres lors des événements sociaux de joie (naissance, baptême . . .) ou de peine (maladie, décès)
- La création d'un centre d'éducation non formel des filles non scolarisées et déscolarisées.

Sur le plan culturel : Théâtre : L'association organise du théâtre-forum en vue de sensibiliser les communautés dans les villages sur des thèmes divers.

Sur le plan environnemental : L'APFG s'est tôt rendue compte du problème créé par la coupe abusive de bois et s'est attaquée au problème sur plusieurs fronts :

- Réduction de la consommation de bois et de charbon par l'utilisation et la promotion des foyers améliorés et des cuiseurs solaires ou au gaz
- Le reboisement.
- Le renforcement des capacités sur les thèmes divers et d'actualité contribuant au processus de changement de mentalité, qui est le moteur de l'épanouissement de la jeune fille et de la femme.

La dynamique interne de transformation sociale a été l'approche privilégiée par notre organisation. Cette dynamique part de ce qui émane des femmes et des filles. En vingt-cinq années d'existence, l'APFG a pu ainsi mettre en place le mécanisme qui lui a permis de contribuer à l'éveil des consciences et à l'épanouissement de la femme rurale par une approche participative et concertée.

4 Nous sommes un exemple de solution

Aujourd'hui, l'APFG est une organisation de base dans la région du Sud-Ouest du Burkina Faso, qui mène des activités concrètes sur le terrain ; il s'agit d'unités de transformation des produits cultivés localement, de la formation professionnelle et de l'éducation des filles, de la création d'une structure propre de crédit de proximité pour l'autonomisation, qui répond aux attentes des femmes.

Exemple : la création et l'accompagnement des associations autogérées. Ces associations féminines du milieu rural se sont approprié les principes du développement durable en mettant en marche leur propre activité.

L'arbre ne doit pas cacher la forêt, car quelques difficultés existent quand même. Toute modestie mise à part, nous disons aujourd'hui que nous sommes une des solutions aux maux qui nous minent. Encore faut-il que les politiques, les partenaires techniques et financiers le comprennent, et ne se limitent pas à s'occuper seulement des fonds injectés pour le développement. Un développement durable est possible à condition que les relations de collaboration soient établies dans les deux sens. C'est-à-dire qu'il faut changer ou faire évoluer le système actuel où les organisations féminines n'ont pas accès aux financements ni aux appels à candidatures lancés par les partenaires techniques et financiers, les fondations. Il faut donc renverser la tendance en faisant une analyse en profondeur de la situation des organisations féminines émergentes, afin de disposer d'un répertoire des dites organisations féminines.

Il faut noter que ces organisations féminines développent des initiatives provenant de la base, qui fonctionnent avec des stratégies efficaces et qui donnent des résultats à court terme. La contribution des acteurs est de se baser sur l'existant pour améliorer le futur en ce qui concerne l'épanouissement de la femme, où celle-ci doit être le moteur du développement. C'est ce que l'APFG a mis en marche depuis sa création.

L'insuffisance du système de financement avec ses lourdeurs, ses principes qui ne répondent pas au contexte, etc., ont amené certaines organisations à ne compter que sur elles-mêmes. Elles ont compris qu'elles sont elles-mêmes la solution. C'est dire que malgré les avancées significatives observées, des défis restent à relever afin d'optimiser les acquis et ce dans tous les domaines. Il faut consolider les acquis tout en poursuivant les campagnes de plaidoyer et de sensibilisation de façon efficace.

Démographie de l'Afrique Subsaharienne : Données et projections des Nations unies

Demography of Sub-Saharan Africa: United Nations data and prospects

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Résumé : L'Afrique subsaharienne, qui comptait 180 millions d'habitants en 1950, en compte aujourd'hui un milliard. Sa population devrait doubler d'ici 2050, selon la projection centrale des Nations Unies (2017) et pourrait doubler encore entre 2050 et 2100 selon la même source. La forte croissance actuelle (+ 2,7% par an) n'est due que pour une faible part à la baisse de la mortalité, l'essentiel résultant du maintien d'une forte fécondité jusqu'aux années 1990 (au-dessus de 6,5 enfants par femme) et à la lente diminution depuis (4,75 enfants actuellement). La transition démographique est donc largement engagée en termes de mortalité, mais peu pour la fécondité. Il en résulte une transition beaucoup plus lente que celles observées en Asie et en Amérique latine, et donc le fort accroissement de population à venir. Les Nations unies prévoient pourtant, même dans leur hypothèse centrale (« medium »), une diminution régulière de la fécondité, jusqu'à 2,1 enfants par femme à la fin du siècle. Dans l'hypothèse basse de ces projections, la fécondité tomberait à 1,6 enfant en fin de siècle, et l'effectif de la population passerait à moins de 3 milliards au lieu de 4. Une accélération de la baisse de la fécondité aurait donc un effet sensible à long terme. Elle supposerait une augmentation du recours aux méthodes modernes de contraception, augmentation possible au vu des niveaux élevés de pratique déjà constatés dans certains pays d'Afrique australe et de l'Est. Il faudrait aussi que les modèles familiaux évoluent (réduction du nombre d'enfants souhaités) et que les inégalités de genre se réduisent.

Abstract: In 1950, sub-Saharan Africa had a population of 180 million. Today, it is around 1 billion. According to the 2017 United Nations medium projection, it should double before 2050 and might double again between 2050 and 2100. The currently high growth rate (2.7% per year) is only slightly due to the decrease in mortality, the major component being consistently high fertility levels until the mid-1990s (more than 6.5 children per woman) and a slow decrease since then (currently 4.75 children). The demographic transition is thus well under way for mortality, but much less so for fertility. The situation is quite different in Asia and Latin America (where fertility is now quite low), and the potential for population increase is very high in sub-Saharan Africa. Fertility is supposed to decline steadily, however, even in the UN's medium scenario, to 2.1 children at the end of the century. In the UN's low assumption, the final level of fertility would fall to around 1.6 children, and the size of the population in 2100 would be less than 3 billion instead of 4 billion. Accelerating the decline in fertility would therefore have a significant effect on the size of the population, but this would suppose an increase in the use of efficient birth control methods. Such a rise is possible, as high levels of contraceptive use are already observed for several countries of South and

in fertility would therefore have a significant effect on the size of the population, but this would suppose an increase in the use of efficient birth control methods. Such a rise is possible as high levels of contraceptive use are already observed for several countries of East Africa. Other conditions would entail changes in family models (decrease in the number of children wanted) and a reduction in gender inequalities.

South and East Africa. Other conditions would entail changes in family models (decrease in the number of children wanted) and a reduction in gender inequalities.

1 Coup d'œil historique

L'Afrique est riche d'une population nombreuse. Celle-ci était estimée en effet en 2018 à près de 1,3 milliard d'habitants pour l'ensemble de l'Afrique, et à 1,050 milliard pour l'Afrique subsaharienne qui compte ainsi plus de 80% de la population du continent. La population de l'Afrique subsaharienne est appelée à croître encore beaucoup. Elle représentait en 2000 10,5% de la population mondiale. Ces statistiques sont en fait encore beaucoup plus élevées que celles que l'on peut lire dans les ouvrages de référence, car elles sont basées sur des estimations de la population effectuées par les Nations Unies, et qui sont plus précises que celles que l'on peut lire dans les ouvrages de référence. En fait, la population subsaharienne est restée en valeur absolue plus ou moins stationnaire au cours des XVIII^e et XIX^e siècles, pendant que celle du reste du monde augmentait fortement ; on peut penser que la croissance potentielle de la population africaine a été bridée par les conséquences de la traite négrière transatlantique, puis de l'exploitation et de la colonisation du continent par l'Occident, d'où la diminution de sa part dans la population mondiale.

La tendance s'est ensuite inversée, notamment à partir des années 1950, et la population de l'Afrique subsaharienne augmente aujourd'hui 2,5 fois plus vite que le reste du monde, et la différence du rythme de croissance entre l'Afrique subsaharienne et le reste du monde devrait continuer de s'accroître au cours du XXI^e siècle. Les Nations Unies anticipent en fait sur la base de leur hypothèse de référence (ou de leur variante) que la population de l'Afrique subsaharienne augmentera d'un milliard 250 millions de personnes entre 2050 et 4,0 milliards en 2100. Elle représenterait alors 36% de la population mondiale.

Tableau 1 – Evolution de la population de l'Afrique subsaharienne : 1700-2100

	1700	1800	1900	1950	2000	2050	2100
Population de l'Afrique subsaharienne	97	92	95	180	645	2 168	4 002
Afrique subsaharienne/ Population mondiale	14,2	9,5	5,9	7,1	10,5	22,2	35,8

Sources : 1700 à 1900 : Biraben J.N. 2003, Population et Sociétés, Numéro 394 Octobre 2003, et pour 1950 à 2100 : United Nations 2017, World Population Prospects: The 2017 Revision, Medium variant

La tendance s'est ensuite inversée, notamment à partir des années 1950, et la population de l'Afrique subsaharienne augmente aujourd'hui 2,5 fois plus vite que le reste du monde, et la différence du rythme de croissance entre l'Afrique subsaharienne et le reste du monde devrait continuer de s'accroître au cours du XXI^e siècle. Les Nations Unies anticipent en fait sur la base de leur hypothèse de référence (ou de leur variante) que la population de l'Afrique subsaharienne augmentera d'un milliard 250 millions de personnes entre 2050 et 4,0 milliards en 2100. Elle représenterait alors 36% de la population mondiale.

Au cours des dernières décennies, la forte croissance démographique de l'Afrique subsaharienne a résulté à la fois de la baisse de la mortalité et du maintien d'une forte fécondité. Côté mortalité (tableau 2) l'espérance de vie est passée de près de 40 ans en 1955-60 à 60 ans aujourd'hui. L'évolution est encore plus spectaculaire pour la mortalité infantile qui a été divisée par plus de 3 sur la période, passant de 170‰ à 53‰. Des progrès sont encore possibles, mais d'ores et déjà le décès d'un enfant sur

60 à 60 ans aujourd'hui. L'évolution est encore plus spectaculaire en Afrique subsaharienne qui a été divisée par plus de 3 sur la période, passant de 170 p.1000 à 53 p.1000. Des progrès sont encore possibles, mais d'ores et déjà le décès d'un enfant sur 20 montre qu'il n'y a plus lieu de considérer que le risque de décès d'enfants est un argument majeur pour souhaiter avoir un grand nombre d'enfants.

Tableau 2 – Evolution de l'espérance de vie et de la mortalité infantile en Afrique subsaharienne

20 montresubaharienne a plus lieu de considérer que le risque de décès d'enfants est un argument majeur pour souhaiter avoir un grand nombre d'enfants.

Tableau 2 – Evolution de l'espérance de vie et de la mortalité infantile en Afrique subsaharienne

	1955-1960	1965-1970	1975-1980	1985-1990	1995-2000	2005-2010	2015-2020
Espérance de vie à la naissance (années)	38,5	42,7	46,8	49,1	49,4	54,3	60,4
Taux de mortalité infantile (pour 1000)	170	145	123	112	101	74	53

Source: United Nations 2017, World Population Prospects: The 2017 Revision, Medium variant

Nations-Unies proposent une projection à **mortalité constante**. Sur la période 2015-2030, si la mortalité restait inchangée (au lieu de baisser), la population de l'Afrique subsaharienne augmenterait de 411 millions entre 2015 et 2030, au lieu de 449 millions avec la baisse de la mortalité prévue, soit une croissance réduite de 8,6 % seulement. C'est donc bien la fécondité qui est le principal moteur de la forte croissance actuelle de la population de l'Afrique subsaharienne. Précisons cependant que la baisse de la mortalité en elle-même ne joue pas un grand rôle dans la croissance démographique actuelle. Parmi leurs scénarios de projections, les Nations unies proposent une projection à mortalité constante. Sur la période 2015-2030, si la mortalité restait inchangée (au lieu de baisser), la population de l'Afrique subsaharienne augmenterait de 411 millions entre 2015 et 2030, au lieu de 449 millions avec la baisse de la mortalité prévue, soit une croissance réduite de 8,6% seulement. C'est donc bien la fécondité qui est le principal moteur de la forte croissance actuelle de la population de l'Afrique subsaharienne. Précisons cependant que la baisse de la mortalité en elle-même ne joue pas un grand rôle dans la croissance démographique actuelle. Parmi leurs scénarios de projections, les Nations unies proposent une projection à mortalité constante. Sur la période 2015-2030, si la mortalité restait inchangée (au lieu de baisser), la population de l'Afrique subsaharienne augmenterait de 411 millions entre 2015 et 2030, au lieu de 449 millions avec la baisse de la mortalité prévue, soit une croissance réduite de 8,6% seulement. C'est donc bien la fécondité qui est le principal moteur de la forte croissance actuelle de la population de l'Afrique subsaharienne.

Tableau 3 – Evolution de la fécondité par grandes régions du monde (nombre d'enfants par femme)

	1955 - 1960	1965 - 1970	1975 - 1980	1985 - 1990	1995 - 2000	2005 - 2010	2015 - 2020
Afrique subsaharienne	6,60	6,70	6,78	6,49	5,90	5,40	4,75
Amérique latine	5,88	5,53	4,48	3,46	2,76	2,26	2,04
Asie	5,56	5,73	4,10	3,50	2,56	2,30	2,15

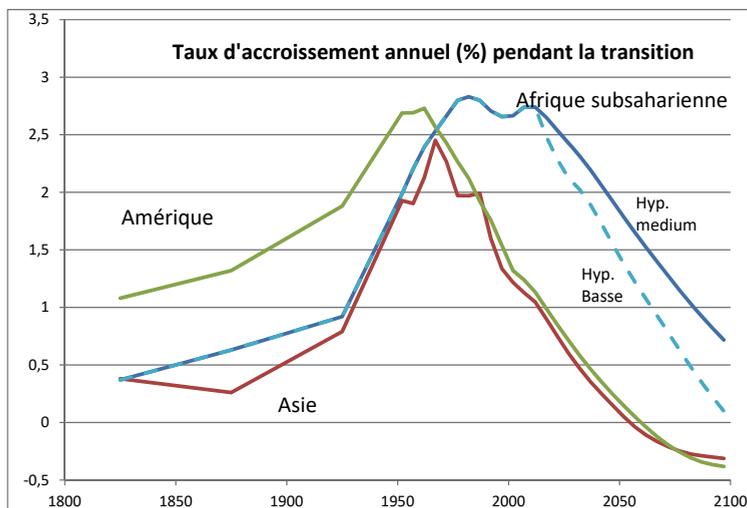
Source: United Nations 2017, World Population Prospects: The 2017 Revision, Medium variant

2 Une trajectoire de transition très différente de celle des autres continents

Voyons donc comment a évolué la fécondité. Au cours des dernières décennies la baisse de la fécondité a été beaucoup plus lente en Afrique subsaharienne que dans les autres continents engagés dans le processus de transition démographique (tableau 3). En 1955-60, les différences entre l'Afrique sub-saharienne : 6,6 enfants par femme, et l'Amérique latine et l'Asie : respectivement 5,9 et 5,6 enfants par femme, étaient limitées. 30 ans plus tard l'écart s'est creusé : 6,5 enfants par femme en Afrique subsaharienne, et 3,5 enfants dans les deux autres régions. Dès 1995 l'infériorité de l'Afrique subsaharienne est devenue plus marquée. En 2010, elle est aujourd'hui à peine supérieure à 2 enfants, contre 1,7 enfant par Afrique subsaharienne.

Cette différence du **taux d'accroissement de la population** (Graphique 1). Comparée aux deux autres continents, on voit que, si le taux maximum de l'ASS sera voisin (quoiqu'un peu plus élevé) de ceux des deux autres régions, la période de forts taux d'accroissement sera beaucoup plus longue : plus de 2% pendant au moins 80 ans (contre 50 et 25% pendant 50 ans. Il en résultera que, pendant la phase de transition démographique, que nous définissons ici comme s'étendant de 1900 jusqu'au moment où la croissance démographique deviendra nulle (vers 2055 en Asie, 2060 en Amérique latine, et 2100 en Afrique subsaharienne) la population de cette dernière aura été multipliée par 50, beaucoup plus que les populations d'Amérique latine et d'Asie multipliées respectivement par 11 et 6.

Figure 1 – Evolution des taux d'accroissement de la population par grandes régions du monde

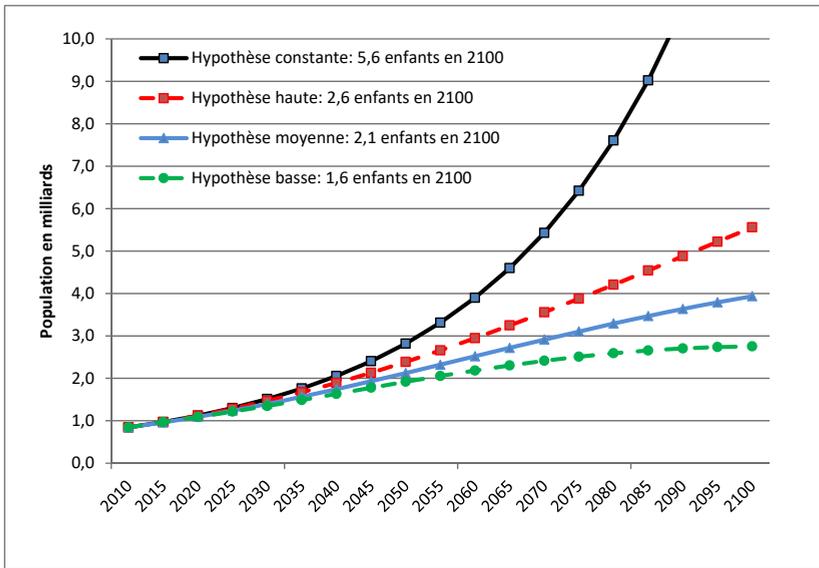


Sources: Avant 1950 :

<http://themasites.pbl.nl/tridion/en/themasites/hyde/basicdrivingfactors/population/index-2.html> Et pour 1950 à 2100, United Nations 2017, World Population Prospects: The 2017 Revision, Medium variant

Tous ces chiffres se réfèrent à l'hypothèse dite moyenne (ou *medium variant*) des projections 2017 des Nations unies. Si leurs auteurs n'aiment pas que l'on présente cette hypothèse comme « la plus probable », c'est quand même celle qui s'appuie sur les évolutions de la mortalité et de la fécondité qui apparaissent aujourd'hui comme les plus raisonnables selon les experts onusiens. Si l'on estime que cette évolution serait encore trop lente, puisqu'il en résulterait l'énorme croissance indiquée au tableau 1 (2,2 milliards d'habitants en 2050 et 4 milliards en 2100 pour l'Afrique subsaharienne), on pourrait préférer l'hypothèse basse (*low variant*) des Nations unies (Figure 2). La différence se ferait surtout sentir après 2050, la population plafonnant autour de à 2,8 milliards dès les années 2090, au lieu d'atteindre 4 milliards en 2100 avec l'hypothèse moyenne et 5,6 avec l'hypothèse haute (*high variant*).

Figure 2 – Projections de la population de l'Afrique subsaharienne selon les différentes hypothèses des Nations unies



Source: United Nations 2017, World Population Prospects: The 2017 Revision

A noter, sur ce graphique, la croissance qui résulterait du maintien de la fécondité actuelle dans chaque pays pendant les prochaines décennies : on compterait 2,8 milliards de Subsahariens en 2050 (au lieu de 2,2 milliards selon l'hypothèse moyenne), et 10 milliards en 2088, ce qui serait l'équivalent du total de la population mondiale en 2055 sous l'hypothèse moyenne. On voit donc bien avec ces quatre hypothèses quel pourrait être l'impact de baisses plus ou moins rapides de la fécondité sur l'évolution future de la population de l'Afrique subsaharienne.

De fait, avec l'hypothèse moyenne, la fécondité devrait passer, de 2000 à 2050, de 5,8 à 3,1 enfants par femme, puis à 2,1 enfants par femme en 2100. Un tel rythme de baisse est possible (il a été observé ailleurs, y compris dans certains pays africains), mais il n'est pas automatique : il faut que les couples changent progressivement de projets (qu'ils veuillent moins d'enfants) et qu'ils modifient leurs comportements

De fait, avec l'hypothèse moyenne, la fécondité devrait passer, de 2000 à 2050, de 5,8 à 3,1 enfants par femme, puis à 2,1 enfants par femme en 2100. Un tel rythme de baisse est possible (il a été observé ailleurs, y compris dans certains pays africains), mais il n'est pas automatique : il faut que les couples changent progressivement de projets (qu'ils veuillent

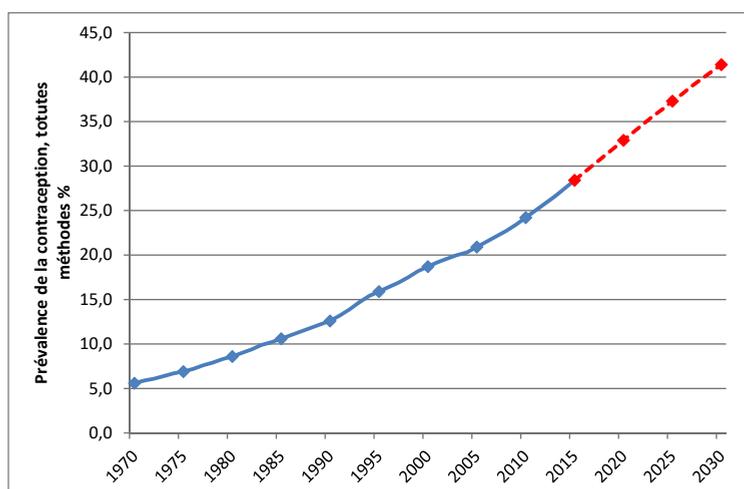
en conséquence (notamment par l'adoption de méthodes contraceptives). On aura l'occasion de voir, tout au long de cet ouvrage, comment une telle évolution peut être soutenue par des initiatives gouvernementales ou locales et d'organisations de la société civile.

Passer tout de suite à l'hypothèse basse, qui suppose donc une baisse plus prononcée de la fécondité, aurait néanmoins des effets rapides sur certains indicateurs, comme l'effectif des enfants scolarisables dans le primaire. Actuellement le rythme d'augmentation des effectifs des 5-14 ans est de 3,3 millions par an. Avec l'hypothèse moyenne, ceux-ci continueraient à augmenter au même rythme pendant encore une trentaine d'années. En revanche avec l'hypothèse basse, l'accroissement des effectifs à scolariser au primaire diminuerait fortement dès 2025, et il n'y aurait plus d'augmentation à partir de 2060 : ce serait donc un soulagement important pour le système scolaire. Cet exemple montre qu'une accélération de la baisse de la fécondité peut avoir des effets rapides, même s'ils ne sont pas très visibles sur la population totale avant 2050.

3 Diversités régionales dans les niveaux et les facteurs de la fécondité

L'expérience montre qu'aucune baisse durable de la fécondité n'est possible sans un accroissement de la pratique contraceptive, et le choix de méthodes efficaces. Les hypothèses moyenne et basse, et même l'hypothèse haute des projections des Nations unies qui supposent toutes une baisse de la fécondité, anticipent également une augmentation de l'utilisation des méthodes contraceptives. Ainsi, l'hypothèse moyenne est associée avec une augmentation importante de l'utilisation de la contraception qui devrait passer de 28% en 2015 à 41% en 2030 (figure 3).

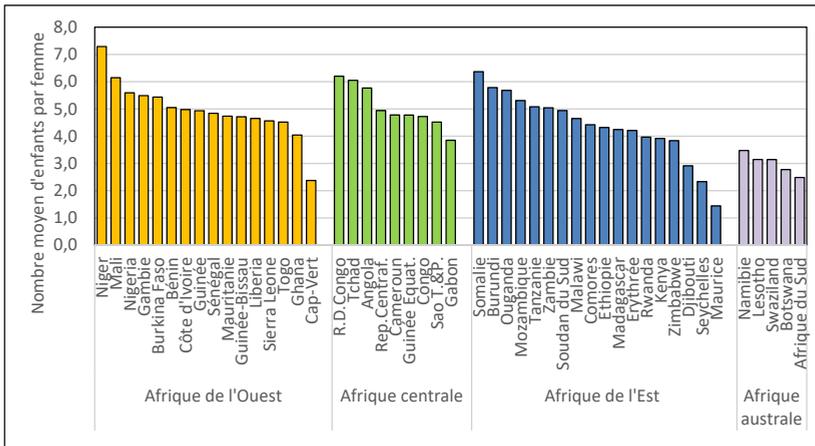
Figure 3 – Evolution de l'utilisation des méthodes contraceptives en Afrique subsaharienne



Source: United Nations 2015, Model-based estimates and projections of family planning indicators

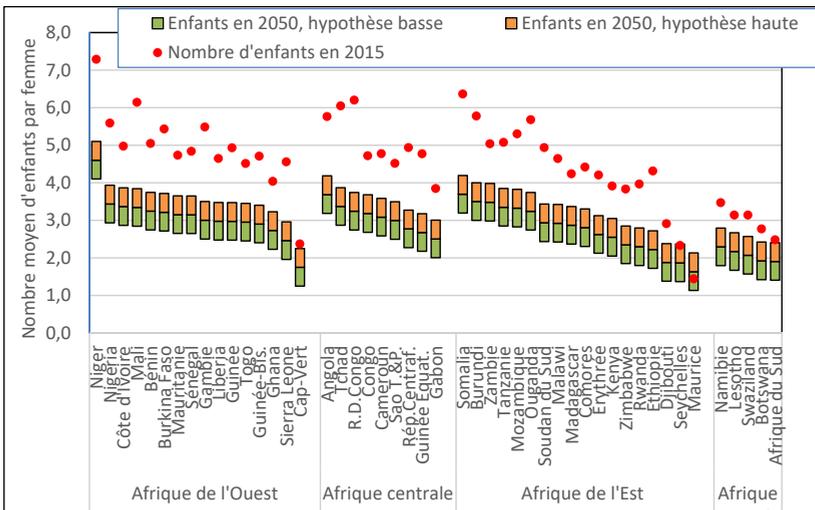
Nous nous sommes intéressés jusqu'ici aux résultats globaux pour l'ASS. Bien entendu la situation n'est pas la même dans tous les pays. On peut voir que la baisse de la fécondité est plus avancée en Afrique australe et dans certains pays d'Afrique de l'Est (Figure 4). Toutefois, au total, 55% de la population africaine (ASS) vit dans des pays où la fécondité est encore supérieure ou égale à 5 enfants par femme, et 85% dans des pays où elle dépasse 4 enfants.

Figure 4 – Fécondité dans les différents pays d'Afrique subsaharienne en 2015



Source: United Nations 2017, World Population Prospects: The 2017 Revision

Figure 5 – Des baisses de fécondité de l'ordre de 2 à 3 enfants par femme attendues d'ici à 2050 dans la plupart des pays

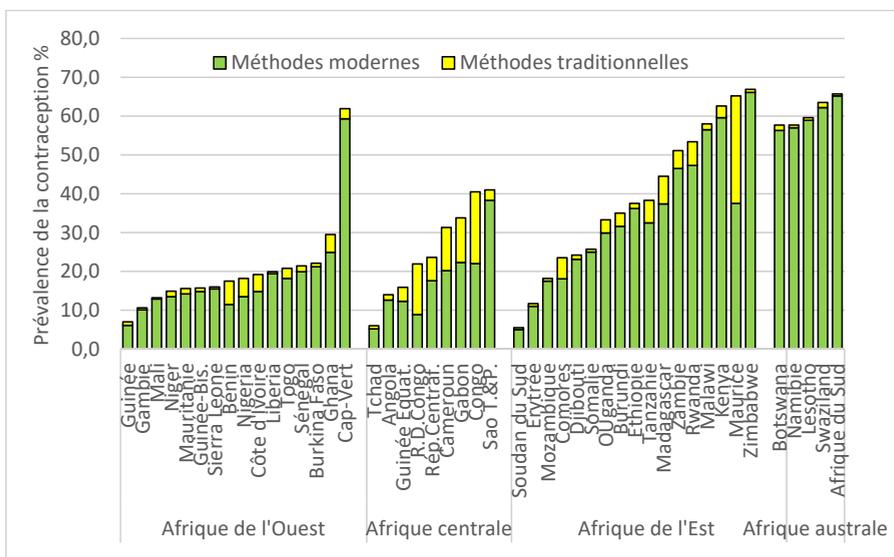


Source: United Nations 2017, World Population Prospects: The 2017 Revision

Les projections 2017 des Nations unies envisagent des baisses assez fortes, de l'ordre de 2 à 3 enfants par femme entre 2015 et 2050 selon les pays et les hypothèses (figure 5). Ainsi en 2050, 84% des Subsahariens vivraient encore dans des pays où la fécondité restera supérieure à 2 enfants par femme, et même 63% de la population si l'on ne retient que les hypothèses hautes, mais 68% avec l'hypothèse moyenne, et seulement 10% avec l'hypothèse basse.

Les taux d'utilisation des méthodes de contraception modernes et traditionnelles, par pays en 2015, vont de 5% à 65%, ce dernier chiffre étant voisin de ceux observés dans les pays émergents et industrialisés. Au total, 55% de la population d'Afrique subsaharienne vit dans des pays où le taux d'utilisation de la contraception (ou prévalence contraceptive) est inférieur à 30%, et même 63% de la population si l'on ne retient que les méthodes modernes.

Figure 6 – Utilisation des méthodes de contraception modernes et traditionnelles, par pays en 2015



Source: United Nations 2015, Model-based estimates and projections of family planning indicators

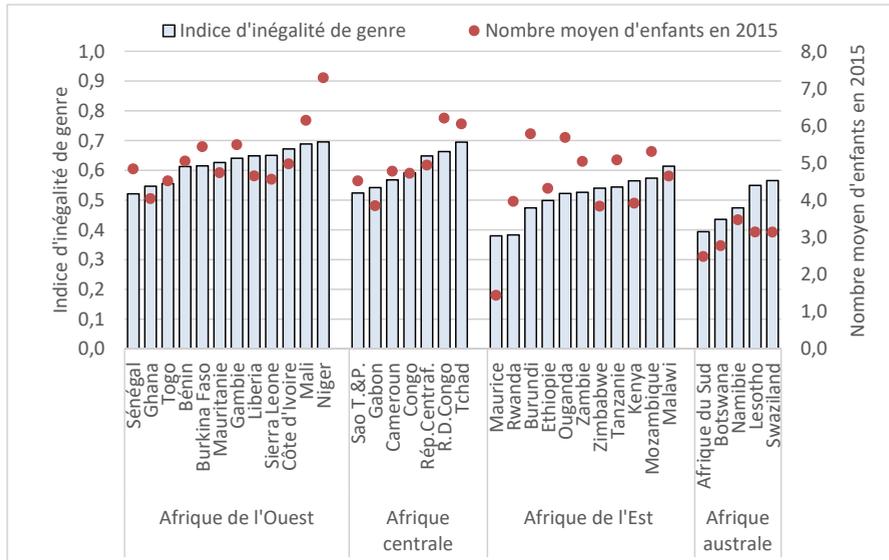
Finalement, il faut réaliser qu'une fécondité élevée (liée à une faible pratique contraceptive) est aussi corrélée à une plus grande inégalité entre femmes et hommes, comme le montre l'indice d'inégalité entre genres (figure 7). Cet indice (GI) reflète les inégalités entre femmes et hommes en matière de santé, de statut social et d'emploi. Il reste élevé dans de nombreux pays, principalement en raison de la charge qui pèse sur les femmes ayant un nombre élevé d'enfants.

Source: United Nations 2015, Model-based estimates and projections of family planning indicators

Finalement, il faut réaliser qu'une fécondité élevée (liée à une faible pratique contraceptive) est aussi corrélée à une plus grande inégalité entre femmes et hommes, comme le montre l'indice d'inégalité entre genres (figure 7). Cet indice (GI) reflète les inégalités

Henri Leridon , Jean-Pierre Guengant

Figure 7 – Indice d'inégalité de genre et fécondité, par pays en 2015



Sources: UNDP Human Development Report 2016: Human Development for Everyone Et United Nations 2017, World Population Prospects: The 2017 Revision

En résumé :

- La population de l’Afrique subsaharienne va augmenter fortement au moins jusqu’en 2050, quelles que soient les hypothèses envisagées de baisse de la fécondité. Sources: UNDP Human Development Report 2016: Human Development for Everyone Et United Nations 2017, World Population Prospects: The 2017 Revision
- Un rythme de croissance aussi soutenu pendant autant d’années n’a jamais été observé dans les autres régions du monde.
- Une part importante de la croissance économique sera absorbée par cet accroissement démographique continu exceptionnel.
- Pour réduire les impacts sociaux négatifs de ces tendances, et pour tirer profit d’un éventuel “dividende démographique”, il conviendrait d’accélérer la transition démographique, et en particulier que la fécondité baisse plus vite qu’au cours des dernières années.
- Une participation entière et égalitaire des femmes dans le développement des divers pays nécessite avant tout une reconnaissance effective de leurs droits, notamment sexuels et reproductifs.

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- [4] United Nations 2015, *Model-based estimates and projections of family planning indicators*
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PART THREE: WOMEN & EDUCATION

Education and empowerment of women

Education et autonomisation des femmes

Oyewale Tomori

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Abstract: African countries have severely undercut their orderly development by not paying sufficient attention to the education of the female gender, who account for almost 50% of the populations in many countries. Denying a person access to education is a violation of the interrelated rights of availability, accessibility, and inclusivity to quality education and suitable learning environment. Education is a means for acquiring relevant knowledge and a tool for empowerment to reduce poverty. Therefore, investing in the education of women who are mothers to all, and girls who are the future mothers, is a route for sustainable development and eventual elimination of poverty. To achieve and sustain these rights for all – girls, boys, women and men- good governance must be instituted in our countries, for the implementation of policies and programmes that will improve the standard of life and living of the society and ensure the full and effective participation of women at political, economic and public levels.

Résumé : Les pays africains ont gravement compromis leur développement harmonieux en n'accordant pas suffisamment d'attention à l'éducation des femmes, qui représentent près de 50% de la population dans de nombreux pays. Refuser à une personne l'accès à l'éducation est une violation des droits interdépendants de disponibilité, d'accessibilité et d'inclusivité à une éducation de qualité et à un environnement d'apprentissage approprié. L'éducation est un moyen d'acquérir des connaissances pertinentes et un outil d'autonomisation pour réduire la pauvreté. Par conséquent, investir dans l'éducation des femmes, qui sont mères pour tous, et des filles, qui sont les futures mères, est une voie vers le développement durable et, à terme, l'élimination de la pauvreté. Pour réaliser et maintenir ces droits pour tous - filles, garçons, femmes et hommes - une bonne gouvernance doit être instituée dans nos pays, pour la mise en œuvre de politiques et de programmes qui amélioreront le niveau de vie et la vie de la société et assureront la participation pleine et effective des femmes aux niveaux politique, économique et public.

The phrase “Knowledge is power” was first attributed to Francis Bacon and appeared as a maxim in his book *“Meditationes Sacrae and Human Philosophy”*, published in 1597. However, the first documented occurrence of this phrase is from Imam Ali (599-661 CE) in the tenth-century book *Nahj Al-Balagha*. He said: “Knowledge is power and it can command obedience. A man of knowledge during his lifetime can make people obey and follow him and he is praised and venerated after his death.

Remember that knowledge is a ruler and wealth is its subject.” -Saying 146 from Nahj Al-Balagha.

Ali's concept of knowledge must have been what African men accepted, and therefore they decided to exclude women from acquiring knowledge, concluding that only men should have knowledge and become the rulers whom women must obey and follow. Indeed, knowledge is power, and by directly or indirectly preventing the female population from accessing knowledge through education, women are being rendered powerless. This is tragic, especially as women represent approximately 50% of our national and regional population in Africa.

1 Global population, education and gender parity

In 2015, although women accounted for 49.55% of the global population, 81 countries had more women, while only 36 had a majority of men. In 75 countries, gender parity was within 0.5%. In sub Saharan Africa (SSA), there were more women (50.13%) than men (49.87%), while men in Nigeria accounted for 50.66% of the population; the reverse was the case in Tanzania, where 50.56% of the national population was of the female gender. In many African countries, attention is primarily focused on the education of men. The prevailing culture, in its various forms and dimensions, has been and still is (in many countries) the foundation for denying education to women.

Today, while there is only a marginal difference between the gender numbers in primary school enrolment, the situation deteriorates, especially in Africa, with advancing levels of education at the secondary and tertiary level. The result of this is what has been described as the “education diminishing returns”. In 2015, global primary school enrolment of eligible boys and girls was 87% and 85% respectively. In the SSA, 75% of eligible males, and 74% of eligible females were enrolled in primary schools. Variations were, however, recorded from country to country, regarding enrolment in primary schools. For example, in France, the percentage of males (97%) was slightly lower than that of females (98%). In Tanzania, 83% of eligible females, and 78% of eligible males were enrolled, while in Nigeria the percentage of enrolment was 70% for males and 66% for females. At the secondary-school level, we begin to see the onset of the “education diminishing returns”, which reach disturbing and unacceptable levels at the tertiary education level. Globally, only 53% of males and 54% of females eligible for enrolment in lower secondary school got enrolled. In SSA, the percentages are much lower than global levels i.e., 32% for both males and females. At the country level, for example, in Tanzania, only 25% of eligible males and 31% of females were enrolled in lower secondary school. Surprisingly, in Nigeria, the enrolment situation (50% male and 49% female) is almost the same as the global enrolment. Secondary school completion rates for males and females are 40% and 37% respectively. A much lower percentage (31% males, 24% females) completed secondary school in SSA. In Nigeria, the secondary school completion rates (57% males and 42% females) were higher than the global or SSA rates. We see further evidence of education diminishing returns with secondary school completion and tertiary level admission rates. Globally, only 40% of eligible males and 37% of eligible females completed secondary education while 33% of males and 38% of females got admitted to universities and

other tertiary education institutions. In Nigeria, while 51% of males and 42% of females completed secondary education respectively, only 11.8% and 7.2% of eligible males and females, respectively, got admission into tertiary institutions. In Tanzania, secondary school completion rates for males and females were 32% and 27%, respectively. Tertiary educational admission rates were 4.8% for eligible males and 3.0% for eligible females. The out-of-school rate for SSA was 21% in primary school, 34% in lower secondary school and 58% in upper secondary school.

2 Education diminishing returns and gender disparity

Why do we have the phenomenon of diminishing education returns and why in particular is the education of women neglected? Several factors are responsible for the educational diminishing returns: poor standards and low quality of education, especially in SSA. These factors include:

- High school fees,
- Family commitments
- Illness/disability, chronic diseases-HIV/AIDS
- Working to contribute to family needs
- Political instability and violence
- Poor governance and misplacement of national priority
- Ineffective teaching and lack of learning materials, poor learning environment,
- Gender bias,
- Negative cultural values,
- Early marriage,
- Sexual harassment

Women are more adversely affected than men, and sometime affected solely by some of the reasons given above – working to contribute to family needs, gender bias, negative cultural values, early marriage and sexual harassment. The religious concepts about women being the weaker sex and under the rule of men have limited the role of women to sexual and commercial labour – satisfying the sexual needs of men, working in the fields, carrying loads, tending babies and preparing food. When there are insufficient financial resources for school fees, the boys get the preference as girls are less valued culturally and may even be forced to an early marriage to obtain the resources (bride price) that may end up paying for the education of the boy child.

Education is a means of acquiring relevant knowledge and a tool for empowerment to reduce poverty. Investing in the education of women who are already mothers and of girls who are the future mothers is a route to sustainable development and

eventual elimination of poverty. When we deny a person access to quality education, we prevent the person from :

- acquiring a decision-making ability, which enables a person to arrive at a valid and honest conclusion after weighing the options;
- seeking the truth and take decisions relying on observable evidence;
- acquiring the skills and ability to use tools and machines which have wide applications in one's society;
- developing the ability of effective communication through writing, in order to share information, opinions and conclusions;
- adapting to societal change and staying in harmony with the environment.

Denying a person access to education is a violation of the three interrelated rights required to provide education for all. These are :

- accessibility, that includes all males and females
- quality education which is child-centered, relevant and embracing a broad curriculum, appropriately resourced and monitored, and :
- a suitable learning environment that is consistent with human rights, equal respect for culture, religion and language and free from all forms of violence.

There must be uninhibited and free application of the three rights listed above.

These interrelated rights were specified and must be addressed jointly in order to provide education for all. To achieve and sustain these rights for all, there must be vigorous advocacy for the institution of good governance in our countries, to ensure the implementation of policies and programmes that are beneficial to the society, improving the standard of life and living of the society. Poor governance is the most effective driver of underdevelopment, poverty, and inequality. Poor governance is the most potent weapon needed for the failure of the SDGs. Therefore, we as scientists need to work with the government, using the SDGs as the framework for action. We must cooperate and collaborate with our governments to ensure equal opportunities for the full and effective participation of women at political, economic and public levels.

Unequal opportunities between women and men hamper women's ability to lift themselves out of poverty and to secure improved options to improve their lives. Education is the most powerful instrument for changing women's position in society.

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Partager la science par l'éducation

Sharing science through education

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Résumé : Si la démographie et l'état de l'éducation en Afrique posent de difficiles défis, la jeunesse est un atout pour l'avenir, auquel peut contribuer un enseignement de la science bien mis en œuvre, tout particulièrement auprès des filles. Des projets pilotes nombreux existent, ainsi qu'une communauté d'acteurs, en particulier scientifiques, qui les créent et les développent, en s'appuyant sur l'universelle capacité de curiosité des enfants. La clef se trouve dans la formation des maîtres de l'école primaire et secondaire, que nombre d'actions en cours de déploiement sur le sol africain peuvent accompagner.

Abstract: Demography and status of education in Africa are sources of difficult challenges, but the youth of the population is a hope for the future, to which a well-thought science education can contribute, especially among girls. Many pilot projects do exist, as well as a community of actors, especially scientists, who are creating and developing new tools and ways for science teaching, exploiting the universal curiosity of children. The key for primary and secondary schools stands in teacher training, which is the focus of many actions being developed or planned on the African continent.

1 L'actuelle pyramide des âges, problème ou promesse ?

Nul ne peut ignorer la redoutable situation de l'éducation en Afrique, alors que la démographie emplit les écoles, que les salaires, le recrutement et le suivi professionnel des enseignants sont en difficulté. Or, plus que jamais, l'éducation est indispensable, tant il faut communiquer à toute une jeunesse des compétences multiples, en particulier techniques et scientifiques, pour lui permettre une vie d'adulte qui soit à la mesure des enjeux économiques, climatiques et éthiques qui se posent à l'Afrique. Mais l'on peut également affirmer que, si l'éducation se révèle à la hauteur, l'extrême abondance de jeunes dans la population est une chance extraordinaire, permettant créativité et initiative, comme le montre la Chine actuellement dans un tout autre contexte. Mais

ce dernier pays, dans ces zones rurales, nous montre également combien la croissance des villes, que l'Afrique connaît aussi, laisse tragiquement à l'abandon des millions d'enfants ruraux, sans avenir et sans santé (Normile, 2017).

Nous ne saurions résumer ici le long et excellent rapport de l'Unesco publié en 2016 : *L'éducation pour les peuples et la planète, créer pour tous des avenir durables* (Unesco, 2016). Parmi les défis que veut résoudre le Partenariat mondial pour l'éducation, celui des 400 millions d'enfants qu'en 2030 il faudra scolariser en Afrique, n'est pas le moindre. Comment ne pas se réjouir alors de l'annonce faite à Dakar en février 2018, quand le président de la République française annonça que sur la période 2018-2020 la France contribuerait à ce Partenariat avec 200 millions d'euros, soit 13 fois plus que sa contribution dans la période précédente ? Et il n'est pas indifférent de noter qu'Emmanuel Macron a mis tout particulièrement l'accent sur la formation des instituteurs et des professeurs. Ces derniers sont au cœur d'une transformation de l'éducation, mais leur action s'inscrit désormais dans une époque où émerge la formidable puissance des réseaux et de l'intelligence collective (Blamont, 2018). Des outils tels que les smartphones, les réseaux sociaux, la science participative offrent un potentiel encore largement inexploré et en pleine croissance. Outre l'accès à l'information, éventuellement de façon interactive, ces outils permettent des collaborations internationales que les finances ne limitent presque plus (APSA, 2018). Ils peuvent aussi élargir au-delà de l'école un propos éducatif qui associe familles et communautés locales : une manière de faire vivre ce sens communautaire si propre à l'Afrique.

2 La curiosité, moteur universel

Depuis vingt ans, les neurosciences nous ont beaucoup appris sur le développement de l'être humain, en particulier sur ses fonctions cérébrales, dès sa naissance et même auparavant. Ainsi, chez le nouveau-né, le petit enfant, l'écolier, le collégien adolescent, nous découvrons peu à peu comment se construit le rapport au langage, au monde qui l'entoure : celui des objets, de la lumière et des couleurs, des plantes et des animaux, du soleil et des étoiles... Une psychologue américaine, Alice Gopnick, a pu qualifier le nouveau-né de « scientifique au berceau » (Gopnik *et al*, 2005). Et ne nous qualifie-t-on pas souvent, nous autres scientifiques et chercheurs, de *grands enfants* ? Stanislas Dehaene, professeur au Collège de France, a consacré une de ses leçons à l'émergence universelle de la curiosité chez l'être humain (Dehaene, 2018). Si nous observons bien, nous constatons que, dans toutes les cultures, les enfants – filles aussi bien que garçons – en regardant le monde qui les entoure, posent des questions à leurs parents, des questions qui parfois nous surprennent par leur profondeur. Cette curiosité naissante est le fondement même de la science. Car la science, ce ne sont pas d'abord des réponses : pratiquer la science c'est savoir poser des questions sur les mystères du monde et lorsqu'on tient une bonne question, la découverte n'est pas loin. C'est cette pratique qui nous a appris l'art d'observer, qui nous conduit à raisonner sur ce que nous observons, à mesurer, et à proposer des hypothèses explicatives, à construire des modèles sur le monde, à conquérir une puissance sur lui, source de la technique et de la technologie. Mais l'enfant aime aussi toucher, manipuler,

expérimenter, tout particulièrement lorsque, comme souvent en Afrique, la nature lui demeure encore proche.

Faire vivre la curiosité, le regard et le talent de la main chez l'enfant est le propos de l'éducation. La famille saura transmettre à l'enfant, par les récits et les contes, un langage qui raconte le soleil, les étoiles, les plantes sous forme mythique, imagée. L'Afrique et ses cultures sont extraordinairement riches sur ce point. Puis c'est à l'école que revient de construire, sur ces premières expériences, des structures solides de pensée et des outils de langage. C'est ainsi que l'enfant va entrer dans la science qui est le « comprendre pour savoir », donnant du sens au monde qui l'entoure, et dans la technique qui est le « comprendre pour faire ». Ainsi outillé, il entrera dans le monde adulte sans avoir laissé ses talents en jachère (Pasquinelli, 2014).

3 Questions et esprit de recherche

Nous voici dans une école maternelle de la banlieue parisienne. Le maître demande à Isabelle (5 ans) de verser quelques gouttes d'encre rouge dans un verre d'eau puis d'y disposer une marguerite. Bientôt, les pétales commencent à rosir contrairement à ceux d'une autre marguerite disposée, elle, dans un verre d'eau claire. « Tiens, murmure Isabelle, l'eau, elle est montée dans les pétales » et, aussitôt après, s'adressant au professeur : « Maître, comment c'est possible ? L'eau, elle est montée. D'habitude l'eau, ça coule ». Jolie observation, merveilleuse question. La suite, on la devine. Le professeur va fendre, avec un scalpel, la tige devant les élèves, leur faire observer avec une loupe les fins « tuyaux » par où l'eau monte en raison de ce qu'il appelle la *capillarité*, un mot que les enfants auront à apprendre quitte à ce qu'ils n'en comprennent le sens que bien plus tard.

Et maintenant, une école de Lorraine, en France, a proposé à ses élèves, âgés de 6 ans (classe de CP) un défi qui les occupe pendant plusieurs mois : décider si une souris, qui parcourt un labyrinthe construit par les élèves, apprend à se diriger grâce à sa mémoire du chemin, ou en ayant déposé une odeur (Film, 2011). Ce court film, réalisé tout au long de l'année scolaire, est une magnifique démonstration de l'intelligence qui peut être mise en œuvre chez ces tout jeunes enfants.

Dans ce film, les fillettes sont tout aussi actives, tout aussi curieuses, tout aussi imaginatives que les garçons. Filles et garçons dialoguent à égalité, réfléchissent ensemble pour construire leur image du monde. La science n'a pas de genre, elle n'a pas de sexe, elle est une magnifique aventure propre à l'être humain. Il s'agit de comprendre, de raisonner, de se représenter son propre corps, la matière, inanimée ou vivante, le climat, l'évolution des espèces, la transmission entre générations. Tout ceci, bien entendu, se construit au cœur d'une culture, avec des idées héritées, parfois approximatives, naïves, encombrées de fausses évidences dont il va falloir douter pour les remplacer. Le choc est parfois rude entre ce que telle jeune fille imagine de la réalité et ce qu'elle finira, en éduquant son raisonnement, par en comprendre. Ce qu'elle en fera dans sa vie, dans ses choix personnels, ne relève pas de la science, mais de l'exercice de sa liberté, de son éthique, du discernement. Mais à tout le moins, l'éducation à la science lui aura donné cette liberté de réfléchir par elle-même, d'utiliser les mots justes pour exprimer sa pensée et pour la communiquer autour

d'elle, d'écouter les arguments et de juger, de réfléchir sa conduite et ses actes en les inscrivant naturellement dans sa propre culture. Elle saura également les raisonner vis-à-vis du mieux-être de son village, de son quartier, de sa nation, de son continent africain, et même du monde puisqu'aujourd'hui le changement climatique nous apprend que nous sommes totalement solidaires à la surface de la Terre, alors que nos sociétés sont envahies de science comme de technique.

4 L'aventure de *La main à la pâte*

C'est en s'appuyant sur de telles observations qu'en 1995, le prix Nobel de physique Georges Charpak (Académie, 2011) a lancé une opération qu'il appellera *La main à la pâte* (Charpak, 2005). Il s'agissait, dans les écoles primaires de France, d'aider les instituteurs à faire découvrir la science aux enfants. Nous voulions retrouver ce qui autrefois s'appelait la « leçon de choses », qui avait alors pratiquement disparu de nos écoles. Nous voulions que les enfants observent, expérimentent en faisant des expériences très simples avec un matériel élémentaire, expriment leurs questions, suggèrent des explications que la science appelle des hypothèses, les écrivent sur un cahier avec les mots de la vie quotidienne, puis cherchent à vérifier si la nature validait l'explication donnée ou si, au contraire, il fallait raisonner davantage et proposer une autre explication (Harlen, 2012). Très rapidement, cette pédagogie active s'est répandue dans les écoles françaises. Elle n'était pas vraiment nouvelle, la véritable nouveauté ayant été celle-ci : l'Académie des sciences de France, et de nombreux collègues scientifiques, consacrèrent beaucoup de temps à aider les instituteurs, en leur fournissant des ressources pour leur classe. Aujourd'hui, grâce à un site Internet extrêmement fourni, ces ressources gratuites sont disponibles dans toutes les écoles de France et de la francophonie (Fondation Lamap, 2018).

Nous savions bien sûr que la science est universelle. Mais nous avons découvert ce qui était déjà mentionné plus haut : la curiosité des enfants est également universelle. C'est cette double universalité qui nous a permis de dialoguer avec les écoles et les professeurs d'Asie, d'Amérique latine, d'Europe, et naturellement d'Afrique. Dans les écoles de Johannesburg ou de Lomé, du Cameroun ou du Sénégal, de Madagascar ou de Tunisie, du Maroc ou du Mali, nous avons constaté ce mariage merveilleux entre science et curiosité, entre technique et manipulation. Bien sûr, ce mariage s'exprime dans une culture particulière, avec des mots qui sont ceux de cette culture, de la famille de l'enfant, dans une nature qui est différente selon le climat, la latitude, la végétation, mais l'éveil à la science se produit presque toujours. Néanmoins, les idées majeures qui constituent le cœur de la science d'aujourd'hui, le Grand Récit qu'elle exprime tel que le propose Michel Serres (Serres, 2016), forment une base universelle pour toute éducation à la science (Harlen, 2015). Mise en œuvre à l'école et au collège, bien autant à destination des filles – généralement inventives en plus d'être curieuses – que des garçons, cette éducation aura le double mérite de donner aux enfants un esprit de rigueur et de méthode, et d'être la source d'un choix professionnel de technicien, de médecin, d'ingénieur, de professeur, de chercheur, au service de sociétés qui en manquent parfois cruellement.

5 Que faire ?

Partager ces idées générales sur la place que peut, ou devrait, occuper la science dans l'éducation est une chose, les mettre en œuvre en est une autre, sur le sol africain comme ailleurs. Sans doute, à l'image de ce qui se produit sur d'autres continents – Amérique latine et Europe notamment –, faut-il faire appel aux scientifiques africains eux-mêmes pour accompagner les enseignants et faire le pont entre universalité de la science et traditions culturelles ? De ce point de vue, il faut espérer des Académies des sciences des pays africains – dont la plupart sont nées dans les deux ou trois dernières décennies – qu'elles se lancent dans cette entreprise et qu'elles la fassent bénéficier de leur prestige. À coup sûr, nous devons également développer une coopération Sud-Nord, pour laquelle surgissent de nombreuses initiatives. Le projet CESAME, lancé en 2017 au sein de l'Académie des sciences de France, offre des pistes prometteuses (Cesame, 2017), dans le sillage de *La main à la pâte* et du programme *Scientiam Inquirendo Discere* en Italie (ANISN, 2018), avec le concours de l'ICTP (International Center for Theoretical Physics) de Trieste et celui des centres AIMS (African Institutes for Mathematical Sciences) en Afrique. Le programme APPRENDRE, coordonné par l'Agence Universitaire de la Francophonie, devra posséder un volet scientifique significatif (Apprendre, 2018), s'appuyant en particulier sur une belle initiative de physiciens, l'Association pour la promotion scientifique de l'Afrique (APSA, 2018).

6 La formation des maîtres, clé du renouveau éducatif

Ce renouveau se dessine sur tout le continent. À cet égard, un partenariat fructueux pourrait s'instaurer entre *La main à la pâte*, CESAME, le programme APPRENDRE et l'Institut de la Francophonie pour l'éducation et la formation, qui, situé à Dakar, s'appuie sur la Conférence africaine des ministres de l'éducation, et sur la conférence africaine des ministres de la jeunesse et des sports. À travers quatre programmes structurants – l'Initiative francophone pour la formation à distance des maîtres (IFADEM), l'Initiative « École et langues nationales » en Afrique (ELAN-Afrique), la formation et l'insertion professionnelle des jeunes (FIPJ), l'Appui aux innovations et réformes éducatives (PAIRE). L'Institut de la Francophonie pour l'éducation et la formation accorde la priorité à l'éducation de base et à la formation professionnelle et technique. Il propose et organise des activités de renforcement des capacités des enseignants, des personnels d'encadrement, des cadres et gestionnaires du système éducatif, et d'évaluations des apprentissages des élèves. Il fournit aux États et gouvernements qui le souhaitent le conseil et l'expertise technique nécessaires sur différents aspects éducatifs, en vue d'améliorer la qualité des programmes d'enseignement, notamment par la promotion de l'innovation pédagogique.

Il s'agit, au fond, à la fois d'instruction et d'éducation, et le rôle du maître est essentiel dans les deux secteurs. *Instruire*, c'est la fonction propre des enseignants. Elle leur permet d'aller au cœur des méthodes et des savoirs, ce que marque le préfixe *in-*, qui signifie que l'on entre dans un champ de connaissance donné. Et ne pensons pas que la mise à disposition, grâce à Internet, de données en nombre considérable que chaque élève peut aujourd'hui, en Afrique comme en Europe, trouver sur sa tablette ou son téléphone portable, rende moins nécessaire ce face à face : Internet colporte des

données, mais ne classe pas, ne trie pas, n'élimine pas les erreurs ni les manipulations intéressées. Le maître apprend à choisir l'information fiable, à la contrôler, à relier l'expérience à la loi, à utiliser le questionnement critique pour accéder à un savoir authentique. Il aide la pensée à se structurer, sans quoi elle demeure floue et souvent impuissante. Il est important que non seulement les filles et garçons en bénéficient à tous les niveaux, mais qu'ils soient encouragés à aller le plus haut possible dans la découverte et la réalisation de leurs potentialités. Et sur ce point, l'observation montre que le corps enseignant lui-même doit refléter la dualité des genres et comporter des femmes professeurs, qui puissent être aussi examinatrices lors des examens et des concours.

L'éducation quant à elle met en cause le milieu familial autant que l'école, car elle s'adresse au futur adulte, à celui et à celle qui devra trouver un emploi digne et conforme à ses capacités, mais aussi au citoyen, celui qui vit dans une collectivité, qui peut souhaiter fonder une famille et qui a des devoirs envers ses concitoyens. Elle donne à tous les moyens de s'extraire des conditions socio-économiques de l'environnement ; elle rend capable d'autonomie, d'émancipation, de responsabilité.

Et les filles ont ici un double rôle, qu'il faut souligner : d'une part, elles ont le même droit à l'éducation, au plus haut niveau possible, que les garçons, et d'autre part, à un autre âge de leur vie, même si l'enseignement n'est pas leur profession, la part d'éducation qui revient à la famille va les solliciter, les mobiliser. Les mères guident leurs enfants, sont source d'interdictions et d'encouragement, de conseils et d'exemplarité. Elles peuvent ouvrir le monde des possibles en accompagnant la découverte du monde et de soi-même que réalise chaque enfant, parfois même en s'éduquant avec lui. Bien sûr, les pères sont également concernés et l'on ne peut que souhaiter qu'ils prennent toute leur part dans le processus d'éducation se déroulant au sein de la famille.

En fin de compte, ce sont les pratiques de tout le pays, sociales, politiques, culturelles, qui donnent tout leur sens à la priorité éducative, dont les citoyens et leurs élus portent la responsabilité. Le « moment » de Dar-el-Salaam marque, de ce point de vue aussi, un nouveau départ.

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PART FOUR: WOMEN & HEALTH

Reproductive health and development: Perspective from Ghana

Santé reproductive et développement : Perspective du Ghana

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Abstract: This paper is focused on Ghana's perspective on the provision of reproductive health services by the Ghana Health Service and other stakeholders, highlighting the relationship between the health and the wealth of a nation as stated in the theme: "*Creating Wealth through Health*" in the National Health Policy [1] and previous Health Sector medium-term Strategy. The article provides a description of the Health Delivery System and its organization, examples of health infrastructure issues and actions in support of Sexual & Reproductive Health in Ghana, Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs) towards Universal Health Coverage. Ghana's progress with the MDGs, actions to accelerate attainment as in the MDG5 Acceleration Framework (MAF), the Newborn Care Strategy and others are stated. Examples of Implementation Researches on continuum of care and task-sharing, which led to policy changes and improved outcomes were observed. The pivotal role of family planning in Sexual and Reproductive Health and development as a whole and its relevance to all 8 MDGs as well as to SDGs and the modest achievements in family planning between 2008 and 2014, despite non-attainment of the MDGs 5 and 4 (for infant health) and the role of adolescent health and development are highlighted and concluded with recommendation to improve on current status.

Résumé : Ce document est centré sur la perspective du Ghana pour la fourniture de services de santé reproductive par le Ghana Health Service et d'autres parties prenantes, en soulignant la relation entre la santé et la richesse d'une nation comme indiqué dans le thème "Créer la richesse par la santé" dans la politique nationale de santé [1] et la précédente stratégie à moyen terme du secteur sanitaire. L'article fournit une description du système de prestation de soins de santé et de son organisation, des exemples de problèmes d'infrastructure de santé et d'actions à l'appui de la santé sexuelle et reproductive au Ghana, des Objectifs du Millénaire pour le Développement (OMD) et des Objectifs de Développement Durable (ODD) vers une couverture universelle de la santé. Les progrès réalisés par le Ghana dans la réalisation des OMD, les mesures visant à accélérer la réalisation des OMD, comme le Cadre d'accélération de l'OMD 5, la Stratégie pour les soins aux nouveau-nés et d'autres mesures sont énoncés. Des exemples de recherches de mise en œuvre sur le continuum des soins et le partage des tâches ont mené à des changements de politiques et à une amélioration des résultats. On met en évidence le rôle central de la planification familiale dans la santé sexuelle et reproductive et pour le développement dans son ensemble et sa pertinence pour l'ensemble des 8 OMD ainsi que pour les ODD; les résultats modestes obtenus en matière de planification familiale entre 2008 et 2014, malgré la non-réalisation des OMD 5 et 4 (pour la santé infantile) et le rôle de la santé

et du développement des adolescents, sont aussi mis en évidence et on conclut par une recommandation visant à améliorer la situation actuelle.

1 Background Information on Ghana

For some background information on Ghana, please see [2].

Since Ghana gained independence in 1957, all political administrations/governments have prioritized to increase access to health services implementing varied/different strategies and levels of achievement. The construction of health facilities have been carried out to improve geographical access by bringing facilities closer to people in their communities. Beyond the construction and maintenance of health facilities, creation and support of outreach services, introduction of facility user fee schemes, training and employment of health workers and the provision of inputs and materials for the smooth operation of health facilities are important aspects of infrastructure/health systems in efforts to improve financial and social access.

2 Ghana's Health System

Ghana's health system consists of five levels of care: Community, Sub-district, District, Regional and Tertiary levels (Figure 1).

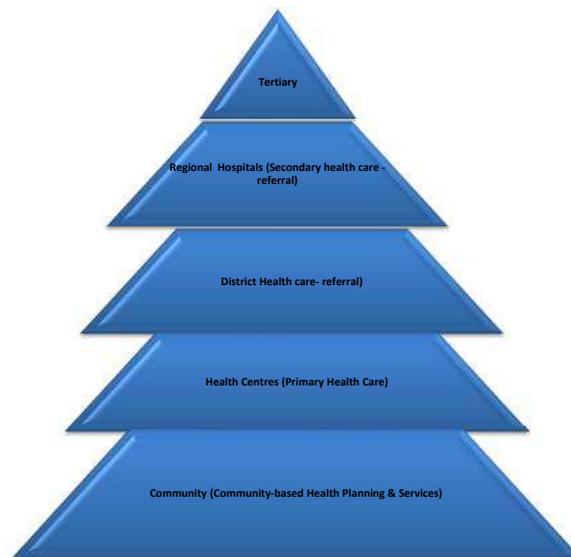


Figure 1 – Ghana's health system levels of care

At the Community level, Community-based Health Planning & Services (CHPS) are provided at CHPS compounds or at designated CHPS zones by Community Health Officers and Nurses providing clinical care for minor ailments at the Compounds and health promotion and preventive services during home visits; Health Centres at Sub-

Ghana's health system consists of five levels of care: Community, Sub-district, District, Regional and Tertiary levels (Figure 1).

At the Community level, Community-based Health Planning & Services (CHPS) are provided at CHPS compounds or at designated CHPS zones by Community Health Officers and Nurses providing clinical care for minor ailments at the Compounds and health promotion and preventive services during home visits; Health Centres at Sub-district level

district level provide Primary Health care services headed by Medical Assistants and Midwives; the District level provides primary health care referral services with doctors – Medical Officers, and Specialists when available, with the other staff; Second level referral services are provided at Regional Hospitals by Specialists and Medical Officers and the full complement of staff and the Tertiary level are the highest referral levels at Teaching Hospitals with all major specialties. Thus the array of Health facilities in the public sector consist of Community-Based Health Planning & Services Compounds; Clinics; Health Centres; Nutrition and Rehabilitation Centres; Polyclinics; District Hospitals; Regional Hospitals; Specialized Hospitals and Teaching Hospitals. Health facilities provide curative, preventive, health promotion and few mobile or non-static clinics providing outreach services mostly on an out-patient basis and are very regular or widely accessible to communities.

The District level is the referral level of primary health care services and is the level of implementation and fulcrum from which services are organized. There is supervision and feedback between community, sub-district and district levels and similarly between the Regional level, all of which have management teams and also linkages with the Tertiary level [3] and private providers. The Ministry of Health has the policy of establishing a good referral hospital in every district. This policy implies that where a mission hospital is the only public hospital in the district, the Ministry supports the refurbishment of that hospital so that it could provide good quality medical services and designates it as the referral hospital for the district. However, there are many districts without district hospitals (61 out of 216 in 2013) and with the creation of new districts, some health centres have been upgraded to serve as district hospitals as stop-gap measures.

Some innovations in health systems improvement include:

- Government's adoption of the CHPS Strategy for Primary Health Care and Universal Health Coverage (SDG3). Sub-districts outline CHPS zones by electoral areas – approximately 6,000 with about 4,000 currently functional and increased as resources (financial, human and material) permit. This is done in collaboration with District Assemblies, Community Leaders and widely supported by Development Partners;
- Ghana's National Health Insurance Scheme provides free registration for pregnant women to cover maternity care (Antenatal care, Delivery and Postnatal Care) and children care up to 18 years as a policy to improve financial access and the attainment of MDGs 4 & 5 since 2008. This replaced a number of previous exemption policies towards improving access to antenatal and delivery services;
- There has been an increase in the number of health cadres trained by increasing the number of institutions and increasing intake;
- Attempts to address the challenge of inequitable distribution of staff and inequities in health outcomes are on-going;

- Improving access to services through technology with examples of Ambulance service (local arrangements to complement inadequate National Ambulance service) in the Upper East Region as local ambulance systems “Motor King” powered by motor cycles with carriage, Communication systems, Tele-medicine and E-health
- Data Management & Accountability systems and
- Implementation Research, supporting local level innovation and National Policies.

3 Sexual and Reproductive Health and Development Goals

Specifically for Reproductive Health, the integrated Reproductive, Maternal, Newborn, Child and Adolescent approach including Sexual and Reproductive Rights are being implemented by multi-disciplinary and multi-sectoral stakeholders. Ghana has been signatory of several human rights international agreements and was also a keen signatory at the ground-breaking International Conference on Population and Development in Cairo, Egypt, in 1994 and has since adopted the concepts and the programmes of work and follow-ups. National Reproductive Health Policies & Standards covering all areas (including Sexual & Reproductive Rights) were developed with Multi-stakeholder engagement in 1996 and implemented by stakeholders with timely reviews (in 2004 & 2014); Reproductive Health Commodity Security strategies to ensure availability of Reproductive Health Commodities (including contraceptives) have been prioritized, developed and implemented since 2002 and Ghana has had representation at the Reproductive Health Supplies Coalition since 2009. In 2008, following the declaration of maternal mortality as a national disaster by the then Minister of Health at the Health Partners Summit, the President declared the free maternity care which is being implemented in the most sustainable means – through the National Health Insurance Scheme. In 2012, the MDG 5 Acceleration Framework was put together to accelerate progress towards the attainment of Ghana’s MDG5 targets (2012 – 2015) with support from the European Union and adopted by all stakeholders. The priority areas were: Family Planning, Skilled Attendance (Antenatal care, Delivery and Postnatal Care) and Emergency Obstetric & Newborn Care with identified Crosscutting Issues (Human Resource, Social & Behavioural Change Communication, Finance & Procurement). Ghana made progress but did not attain MDGs 5&4 for infant mortality, mainly due to stagnation in neonatal deaths which persisted at approximately 30 per 1000 live births. In response, a Newborn Care Strategy was developed and is being rigorously implemented. It is worth noting that the two-thirds reduction in child mortality (1 to 4 years) target was attained. We are currently building on the momentum generated by MDG 5 Acceleration Framework to address MDGs 5 & 4 towards the attainment of the Sustainable Development Goals (SDGs) in establishing a transformative new agenda for maternal health towards **“ending preventable maternal mortality”** target 3.1 of SDG 3 – to reduce the global Maternal Mortality Ratio to less than 70 per 100 000 live births by 2030 as well as the under-fives mortality targets and others.

Several Implementation Researches informing policies and strategies have been carried out. Examples are:

The “**EMBRACE**” study (**E**nsuring **M**others and **B**abies **R**egular **A**ccess to **C**are) collaboration between Ghana’s Health Service & University of Tokyo, Japan, has led to the adoption of the Continuum of Care sheet in the Maternal Health Record Books and the subsequent combination with Child Health Record Book into one “Mother & Child Health Record Book”. Built on the continuum of care across the life cycle and health system, this ensures that pregnant women and their babies receive all the necessary services during pregnancy, delivery and post-natal and have pregnancy records for the health care of the child as has been a good practice in Japan, providing useful information on health beyond childhood.

Also task-sharing, in which non-midwives (mostly Community Health Nurses) were trained to successfully provide contraceptive implant services, has led to a policy change and an increase in access to implant services resulting in a significant increase in use, especially in rural Ghana, thus reversing the urban-rural trend in contraceptive use [1]. Other task-sharing are being carried out. Community Health Nurses are also being encouraged and supported to train in midwifery to increase access to maternity care at the community level.

Family Planning remains a pivotal service in sexual and reproductive health (SRH) and as well as development, was a means of attaining all the 8 MDG goals and remains relevant for the SDGs. Ghana recorded an increase in contraceptive prevalence rate from 17% in 2008 to 22% in 2014. There was also a decrease in unmet need for family planning from 35% to 30% an improvement leading to closing the gap and reversal of urban-rural trend in contraceptive use and unmet needs [1]. Also more intensive efforts at Reproductive Health Commodity Security, improved integration of services and efforts at addressing rumours, myths and misconceptions about family planning contributed significantly. There is however, more room for improvement in access to quality sexual and reproductive health services including integration.

The role of adolescents in SRH outcomes and the benefits of well-informed, healthy and productive youth cannot be overemphasized. Increased advocacy and efforts are on-going to improve adolescent health and development to optimize and tap on the demographic dividend in a multi-sectoral strategic plan launched by His Excellency the President. Inclusion of Adolescents and young people and gender sensitivity are increasingly appreciated.

Indeed Our Presidents, First and Second Ladies, other political figures, Traditional & Religious Leaders, Community Members, Development Partners, Private Sector (Civil Society Organizations) CSOs, Academia, the Media and users of health and other services have been of great help and need to be congratulated and their efforts further harnessed.

In Summary,

“The Millennium Development Goals, particularly the eradication of extreme poverty and hunger, cannot be achieved if questions of population and reproductive health are

not squarely addressed. And that means stronger efforts to promote women's rights, and greater investment in education and health, including reproductive health and family planning."

— *United Nations Secretary-General Kofi Annan, 2002*

In conclusion, Reproductive health is essential to the existence and development of the human race and has many ramifications which can contribute to development. Although much has been done and some progress made, there is the need to intensify efforts: to increase momentum of MDGs into SDGs; towards improved multi-sectoral collaboration, coordination and accountability systems, including CSOs & Private Sector; to move beyond coverage (access) to improve quality and equity; to sustain financial access; maintain and improve on various aspects of Health Systems and infrastructure; to move beyond national averages to local implementation of research and solutions with communities, facilities etc. and improve local engagement and empowerment of communities, women and their immediate families.

Acknowledgements and Contributions, including background information, Ghana Health Service Annual Reports and presentation materials by:

Dr. Gloria Quansah Asare (Deputy Director-General, Ghana Health Service) and

Dr. Koku Awoonor-Williams (Director, Policy, Planning, Monitoring & Evaluation Division, Ghana Health Service

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Reproductive health and women development

Santé reproductive et développement personnel des femmes

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Abstract: Reproductive health (RH) includes; the use of effective contraception, quality antenatal care, clean safe delivery including emergency obstetric care, and quality care for infants as a critical component of human capital. There is a relationship between reproductive health and the three important areas of human capital development, which include: Do healthier women with fewer children invest more in human capital? Do women participate more in the labour market? Does better RH increase women's ability to earn and save more and thus help them and their families to escape poverty? To improve reproductive health, barriers that limit access to quality maternal health services must be identified and addressed at all levels of the health system. The cornerstone to a reduction in maternal mortality is a comprehensive approach from pre-pregnancy, where family planning services must be available to all women, adolescent girls, and quality care during labour and delivery.

Résumé : La santé reproductive (SR) comprend l'utilisation d'une contraception efficace, de soins prénatals de qualité, un accouchement sans risque, y compris des soins obstétriques d'urgence, et des soins de qualité pour les nourrissons en tant que composante essentielle du capital humain. Il existe un lien entre la santé reproductive et les trois domaines importants du développement du capital humain, à savoir : les femmes en meilleure santé ayant moins d'enfants investissent-elles davantage dans le capital humain ? Les femmes participent-elles davantage au marché du travail ? Une meilleure SR augmente-t-elle la capacité des femmes à gagner et à épargner davantage et les aide-t-elle ainsi, elles et leurs familles, à échapper à la pauvreté ? Pour améliorer la santé en matière de procréation, les obstacles qui limitent l'accès à des services de santé maternelle de qualité doivent être identifiés et éliminés à tous les niveaux du système de santé. La pierre angulaire de la réduction de la mortalité maternelle est une approche globale depuis la pré-grossesse, où les services de planification familiale doivent être disponibles pour toutes les femmes, les adolescents, et des soins de qualité pendant le travail et l'accouchement.

1 Introduction

Reproductive health (RH) is defined as the use of effective contraception, quality antenatal care, clean and safe delivery including emergency obstetric care, and quality care for infants as a critical component of human capital. Thus nations and families must invest more resources in health [1], [2].

There is a relationship between reproductive health and the three important areas of human capital development, which include; Do healthier women with fewer children invest more in human capital? Do women participate more in the labour market? Does better RH increase women's ability to earn and save more and thus help them and their families to escape poverty [3], [4]?

2 Reproductive health and human capital

Women who have better reproductive health status tend to invest more resources in their own and their children's health, education and future productivity, and, as a result: life expectancy is increased, access to FP services contributes to the reduction in fertility, creating an opportunity for women to invest more in education, women's own health and their children's improve, maternal morbidity and mortality decrease, it lowers child morbidity and mortality, and it improves children's nutrition as well as their cognitive development.

3 Reproductive health and labour-force participation

Low fertility and improved reproductive health can affect labour participation by helping women to better control the timing and number of births; timing and planning child bearing help to redirect resources towards schooling, jobs and training.

4 Reproductive health and income/assets

Declining fertility and improved reproductive health ultimately have a positive impact on income growth and asset accumulation at both household and country level. Healthier people work more and are physically and cognitively stronger, hence more productive. Healthier people live longer, hence have more opportunities to benefit economically from human capital investment, the so called "health-wealth" hypothesis.

5 Global Strategy for ending preventable maternal mortality

Maternal mortality has been a major concern of a number of international meetings, including : Millennium Development with the main objectives of : Addressing inequalities in access to and quality of reproductive, maternal, and newborn health care services; ensuring universal health coverage for comprehensive reproductive, maternal, and newborn health care; addressing all causes of maternal mortality, reproductive and maternal morbidities, and related disabilities; strengthening health systems to respond to the needs and priorities of women and girls; ensuring accountability in

order to improve quality of care and equity; ensuring universal health coverage for comprehensive reproductive, maternal, and newborn health care.

The reproductive and child health services should be provided under continuum of care. The continuum of care for reproductive, maternal, new-born and child health includes integrated services delivery to mothers and children from pre-pregnancy, during labour and delivery, immediate postpartum period and childhood. Such care is provided by families, communities and health-care facilities. The continuum of care recognizes that safe child birth is critical to health of both the mother and the new-born, and that a healthy start in life is an essential step towards a sound childhood and productive life. Continuum of care helps providers to identify ways of coordinating and linking resources to avoid duplication and facilitate seamless movement among health care settings. Mothers and new-borns are inseparably linked in life and health care needs [5].

6 Most important

It should be noted that, to improve reproductive health, barriers that limit access to quality maternal health services must be identified and addressed at all levels of the health system. The cornerstone to reduction in maternal mortality is a comprehensive approach from pre-pregnancy, where family planning services must be available to all women and adolescent girls, to quality care during labour and delivery including availability of Emergency Obstetric and Newborn care services, which must be available 24 hours a day, seven days a week. Postpartum care and post-abortion care services are equally important, they should be available timely and of good quality to all those who need them. All these build on a foundation of availability of basic maternity care, universal health coverage and equity for women [5].

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PART FIVE: WOMEN & POLICY MAKING

Mainstreaming gender in Africa's Policymaking to deliver agenda 2030

Intégrer l'égalité des sexes dans l'élaboration des politiques africaines en vue de la mise en œuvre de l'agenda 2030

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Abstract: Despite significant advancement in human development and economic growth and more particularly regarding inequality reduction in Africa, there is still a long way to go for attaining gender equality. This paper covers different aspects of gender mainstreaming and women's empowerment on the African continent. It provides facts and figures about inequalities in Africa between men and women, which are among the greatest in the world with African women and girls among the world's poorest, and with the highest rates of illiteracy, as well the regional disparities. It recognises the centrality of gender equality (SDG-5) to the achievement of the 17 sustainable development goals (SDGs), and more particularly the linkages of SDG-5 with SDG-2 (Zero Hunger), SDG-4 (Quality Education) and SDG-6 (Clean water and sanitation). The gender gap costs sub-Saharan Africa on average US\$ 95 billion a year because women have lower participation in the paid labour force. In sub-Saharan Africa, women bear 71% of the water collection burden and produce 90% of all food. African women constitute around 70% of the agricultural labour force in many African countries. They dominate subsistence rainfed agriculture, which puts them more at risk of a changing and variable climate. Existing national policies and regulations exclude women from benefiting equally from water and land resources, and access to finance and credit and other vital inputs. This results in women's productivity lower than men's. Access to education is still a challenge in Africa, with 24% of the girls out of school compared to 18% for boys. 12 million girls (as compared to 7 million boys) in sub-Saharan Africa are never expected to attend school. Important regional disparities between females and males regarding the average number of years of schooling, the wages, or the political representation are underscored. Progress achieved so far in women's empowerment in Tunisia is presented. Gender equality needs to be adequately mainstreamed in sustainable development policy and practice, and a number of challenges should be overcome at different levels (political, economic and social) and in different fields (education, health, political participation and economic empowerment). Moreover, policy measures are required to reduce the gender gaps in access to economic and productive assets, the workplace, and participation in governance and decision-making.

Résumé : En dépit des progrès importants réalisés en matière de développement humain et de croissance économique, et plus particulièrement en ce qui concerne la réduction des inégalités en Afrique, il reste encore beaucoup à faire pour atteindre l'égalité des sexes. Cet article couvre différents aspects de l'intégration de la dimension genre et de l'autonomisation des femmes sur le continent africain. Il fournit des faits

et des chiffres sur les inégalités entre hommes et femmes en Afrique, qui figurent parmi les plus grandes au monde, les femmes et les filles africaines étant parmi les plus pauvres du monde et présentant les taux d'analphabétisme les plus élevés, ainsi que les plus grandes disparités régionales. Le rôle central de l'égalité des sexes (ODD-5) dans la réalisation des 17 objectifs de développement durable (ODD) est souligné et plus particulièrement les liens entre l'ODD-5 avec l'ODD-2 (Faim « zéro »), l'ODD-4 (Éducation de qualité) et l'ODD-6 (Eau propre et assainissement).

L'écart entre les sexes coûte en moyenne à l'Afrique subsaharienne 95 milliards de dollars par an, car les femmes participent moins à la population active rémunérée. En Afrique subsaharienne, les femmes supportent 71% du fardeau de la collecte de l'eau et produisent 90% de tous les aliments. Les femmes africaines constituent environ 70% de la main-d'œuvre agricole dans de nombreux pays africains. Elles sont présentes majoritairement dans l'agriculture pluviale de subsistance, ce qui les expose davantage à un climat changeant et variable. Les politiques et réglementations nationales existantes empêchent les femmes de bénéficier de manière égale des ressources en eau et en terres, ainsi que de l'accès au financement, au crédit et à d'autres intrants essentiels. La productivité des femmes est donc inférieure à celle des hommes. L'accès à l'éducation reste un défi en Afrique, avec 24% des filles non scolarisées par rapport aux garçons. 12 millions de filles (contre 7 millions de garçons) en Afrique subsaharienne ne seraient jamais scolarisées. Les disparités régionales importantes entre les femmes et les hommes en ce qui concerne le nombre moyen d'années de scolarité, les salaires ou la représentation politique sont soulignées. Les progrès réalisés jusqu'à présent dans l'autonomisation des femmes en Tunisie sont présentés.

L'égalité des sexes doit être correctement intégrée dans les politiques et les pratiques de développement durable. Un certain nombre de défis doivent être surmontés à différents niveaux (politique, économique et social) et dans différents domaines (éducation, santé, participation politique et autonomisation économique). En outre, des mesures doivent être prises pour réduire les disparités entre les sexes dans l'accès aux biens économiques et de production, au travail et à la participation à la gouvernance et à la prise de décisions.

1 Introduction

Gender equality is an enabler of growth and a critical accelerator of sustainable development that can significantly contribute to Africa's economic transformation. As stated by Lakshmi Puri (2016a) *“I am referring to gender equality and not gender equity. . . This is not a matter of semantics, but a political statement on the urgency of ensuring equal rights and equal opportunities for all (women and men everywhere and in all spheres of life) as a precondition for us as a society to fully achieve progress in development, peace, security and human rights.”*

Promising to 'leave no one behind', the 2030 Agenda heightens the profile of gender equality as a key component of sustainable development. It positions the achievement of gender equality and women's empowerment as a precondition and necessary outcome of sustainable development (Puri, 2016b) and recognises that the achievement of gender equality is central to reaching the 17 Sustainable Development Goals (SDGs) over the next 15 years and beyond. Gender equality (SDG-5 – Achieve gender equality and empower all women and girls) is indeed critical for poverty reduction (SDG-1), for promoting sustainable agriculture, achieving food security and improved nutrition (SDG-2), ensuring healthy lives (SDG-3) and quality education (SDG-4), ensuring availability and sustainable management of water and sanitation for all (SDG-6), promoting economic growth (SDG-8), combatting climate change and its impacts and strengthening resilience to disasters (SDG-13), managing sustainably natural marine and terrestrial resources and ecosystems (SDG-14 and 15), and promoting peaceful and inclusive communities (SDG-16).

In fact, gender is still not adequately mainstreamed in sustainable development policy and practice. There is no 100% fair and gender equality in the whole world yet, all the

more so in Africa. Despite significant advancement in human development and economic growth and more particularly regarding inequality reduction in Africa, there is still a long way to go for attaining gender equality. A number of challenges should be overcome at different levels (political, economic and social) and in different fields (education, health, political participation and economic empowerment). Moreover, policy measures are required to reduce the gender gaps in access to economic and productive assets, the workplace, and participation in governance and decision-making.

This paper covers different aspects of gender mainstreaming and women's empowerment on the African continent. Facts and figures about inequalities in Africa between men and women and the linkages of SDG-5 with SDG-2 (Zero Hunger), SDG-4 (Quality Education) and SDG-6 (Clean water and sanitation) are presented as well the regional disparities. A case study illustrates the progress achieved so far in women's empowerment in Tunisia. The conclusion attempts to present the change required for gender mainstreaming on the continent.

2 Gender mainstreaming and women's empowerment

Gender mainstreaming is the strategy for the promotion of gender equality. It is part of a holistic approach to achieve women's rights, women's empowerment and gender equality. According to the UN General Assembly (1997), "*Mainstreaming a gender perspective is the process of assessing the implications for women and men of any planned action, including legislation, policies or programs, in all areas and at all levels. It is a strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of all policies and programs in all political, economic and societal spheres so that women and men benefit equally and inequality is not perpetuated. The ultimate goal is to achieve gender equality*".

However, women's empowerment goes beyond gender equality. It is the process by which women gain the power and ability to make strategic life choices and control their own destiny (Kabeer, 1999). Empowerment takes place when "*individuals and organised groups are able to imagine their world differently and to realise that vision by changing the relations of power that have kept them in poverty, restricted their voice and deprived them of their autonomy*" (Eyben, 2011). There are different dimensions of women's empowerment – political, social, economic and psychological – which can be defined as follows (Kabeer, 1999; Luttrell, *et al.*, 2009; Eyben, 2011):

- **Political empowerment:** *when women gain the ability to influence the rules and norms that govern society and decisions about who gets what, when and how – individually or collectively.*
- **Social empowerment:** *when women gain the ability to make/influence decisions about their social interactions, reproduction, health and education.*
- **Economic empowerment:** *when women gain the ability to make, influence and act on decisions about their participation in labour markets, their share of unpaid work and the allocation and use of their own/their household's assets.*

- **Psychological empowerment:** *when women gain the belief that they should be able to make or influence decisions that affect them and gain the confidence to act on this.*"

A study carried out in Addis Ababa found that each of these dimensions is important on its own except the psychological dimension, which was found to be more strongly correlated with all other dimensions (Bayissa *et al.*, 2017). The authors concluded that empowering women psychologically with confidence, information and motivation might be quite effective for achieving progress in all other dimensions of empowerment.

3 Africa's Transformative Agenda 2063, UN Agenda 2030 and the AfDB's High 5s

The Africa's Agenda 2063 adopted in January 2015 by the African Heads of State and the Governments of the African Union laying down a 50-year vision for Africa (AUC, 2015), the 2030 UN Agenda (UN, 2015) and the African Development Bank's (AfDB) Ten Year Strategy implemented through its five priority areas (AfDB, 2016) share a common agenda as well as most of the goals and targets with their focus on the people with particular attention to women, youth, and children (UNDP, 2017). The three agendas converge in considering gender equality as a development goal that is central to the structural transformation of the African economy towards an equitable, inclusive and sustainable development on the continent (Table 1). To reduce gender inequalities, the AfDB, in its 2013-2022 Strategy, focuses on promoting women's economic empowerment, strengthening women's legal and property rights and enhancing knowledge management and capacity building.

Table 1 – Convergence between Africa's Agenda 2063, the UN Agenda 2030, and the AfDB High Fives (Hi5s) regarding gender equality.

UN Agenda 2030	Africa's Agenda 2063	AfDB High 5s 2025
An agenda for People, for the Planet, for Prosperity, for Peace and through Partnerships with a vision of transforming our World to leave no one behind and ensuring its transition to sustainable development	A considerable transformation across all three dimensions of sustainability including the governance, peace and security pillar Aspiration 6: An Africa whose development is people-driven, relying on the potential offered by African people, especially women and youth and caring for children	(H1) Light up and Power Africa (H2) Feed Africa (H3) Industrialise Africa (H4) Integrate Africa (H5) Improve Quality of Life for the People of Africa
SDG-5: Achieve gender equality and empower all women and girls	Goal 17: Full gender equality in all spheres of life Gender parity in terms of access, representation and advancement is attained in all AU institutions and the RECs by 2030	H5 + cutting across High 5s Full gender equality and significant empowerment of African women is achieved by 2023 at the national, regional and continental levels

The targets related to SDG-5 (Achieve gender equality and empower all women and girls) are listed in Box 1.

Box 1. UN Agenda 2030. Targets for SDG-5

- 5.1. End all forms of **discrimination** against all women and girls everywhere
- 5.2. Eliminate all forms of **violence** against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation
- 5.3. Eliminate **all harmful practices**, such as child, early and forced marriage and female genital mutilation
- 5.4. Recognise and value **unpaid care and domestic work** through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate
- 5.5. Ensure women's **full and effective participation and equal opportunities for leadership** at all levels of decision-making in political, economic and public life
- 5.6. Ensure **universal access to sexual and reproductive health and reproductive rights** as agreed in accordance with the Program of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences
- 5.a. **Undertake reforms to give women equal rights to economic resources**, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws
- 5.b. Enhance the **use of enabling technology**, in particular information and communications technology, to promote the empowerment of women
- 5.c. Adopt and strengthen **sound policies and enforceable legislation** for the promotion of gender equality and the empowerment of all women and girls at all levels

African governments recognise women's rights to equal access to opportunities and services, and have adopted gender policies and various initiatives such as declaring 2010-2020 as the African Women's Decade; 2015 as the "Year of Women's Empowerment and Development towards Africa's Agenda 2063"; and 2016 as the "African Year of Human Rights with particular focus on the Rights of Women". To attain goal 17, African countries would have to address the following priority areas and achieve the related targets (Box 2):

Box 2. AU Agenda 2063. Goal 17: Full gender equality in all spheres of life

Priority Areas for 2063	Targets
Empower women and girls and provide equal access and opportunity in all spheres of life.	<ol style="list-style-type: none"> 1. Equal economic rights for women, including the rights to own and inherit property, sign a contract, register and manage a business and own and operate a bank account by 2025. 2. Ensure 90% of rural women have access to productive assets, including land, credit, inputs and financial services by 2030. 3. 50% of all elected officials at local, regional and national levels are women by 2030. 4. At least 50% of management positions in government and private sector are held by women by 2030.
End all forms of violence and discrimination (social, economic and political) against women and girls and ensure full enjoyment of all their human rights	<ol style="list-style-type: none"> 1. Reduce to zero all acts of violence against women and girls in all settings (private, public as well as in conflict situations). 2. End all harmful social norms and customary practices against women and girls and those that promote violence and discrimination against women and girls by 2030. 3. Eliminate all barriers to quality education, health and social services for women and girls by 2020. 4. End all forms of political, social, economic, legal or administrative discrimination against women by 2020.

Nevertheless, the continent still scores lower than other regions in the world on the Gender Parity Index, and particularly in wage parity and access to economic empowerment and social protection. Despite the continent's ambitious policy frameworks and instruments, implementation has been slow. Differences between women and men are measured across economic opportunities, human development, law, and institutions.

4 Gender equality and inclusion in facts and figures

Inequalities in Africa between men and women are among the greatest in the world with African women and girls among the world's poorest, and with the highest rates of illiteracy. In sub-Saharan Africa, girls still face barriers to entering both primary and secondary schools. Important regional disparities between females and males regarding the average number of years of schooling, the wages, or the political representation have been underscored.

African women hold 66% of all jobs in the non-agricultural informal sector and only make 70 cents for each dollar made by men. Low participation of women in the formal labour sector and discrimination against female entrepreneurs, workers and managers negatively affects their productivity and results in large disparities in income between women and men. Only between 7-30% of all private firms have a female manager. The gender gap costs sub-Saharan Africa on average US\$ 95 billion, which is equivalent to 6% of GDP, because women have lower participation in the paid labour force (UNDP, 2016).

4.1 SDG-5 and 2 – End hunger, achieve food security and improved nutrition and promote sustainable agriculture, and achieve gender equality and empower all women and girls

African women are both economically active and highly entrepreneurial — as farmers, workers and entrepreneurs — more than anywhere else in the world (Fraser-Moleketi, AfDB, 2015). They form the core of the agricultural labour force (nearly 70%) (Figure 1) and produce the majority of Africa’s food (about 90%). They dominate subsistence rainfed agriculture, which puts them more at risk with a changing and variable climate. Women work predominantly in low-paying occupations. They hold four of every ten jobs and earn on average 2/3 of the salary of their male colleagues. Women in farming and agribusiness often experience serious gender-related constraints – including in land ownership, inheritance rights, adequate time free from household duties, and access to inputs, finance and markets (AfDB, 2015).



Figure 1 – Women working in agricultural fields.

Existing national policies and regulations exclude women from benefiting equally from water and land resources, and access to finance and credit and other essential inputs such as fertilisers, new technologies and extension services (Parker *et al.*, 2016; Salo, 2013). The lack of finance remains the biggest constraint on women’s business expansion. Access to financial services is held back by legal obstacles, cultural assumptions and common banking practices. Concerning access to land, there is discrimination in both formal laws and customary practices regarding ownership or control of land. Women represent just 15% of landholders. Their rights to inherit land are restricted, and they are vulnerable to dispossession on divorce or widowhood. Insecure land rights for women lead to underinvestment and to women’s productivity being 30% lower than men’s. More secure land rights can deliver both greater protection for women and greater incentive and opportunity to develop more productive agriculture.

Narrowing the gender gap in agricultural productivity can provide an important contribution to food security and to inclusive growth and can therefore reduce poverty.

4.2 SDG-5 and 6 – Ensure availability and sustainable management of water and sanitation for all, and achieve gender equality and empower all women and girls

In sub-Saharan Africa, women support the worst of Africa's infrastructure deficit – particularly power and water: 71% of the water collection burden and long hours spent each day collecting firewood and other biomass (15 to 17 hours/week, and a walking distance of about 10 km) (Figure 2). They are involved in water-related activities such as water conservation, water storage, domestic cleaning, crop production in both irrigated and rainfed agriculture, and preparation of food. Research across 15 countries showed that water supply projects designed and run with the full participation of women were more sustainable (Gross *et al.*, 2000). Women also have a lack of access to information and communication technology.



Figure 2 – Women and girls fetching water and firewood.

Human resources shortages are reported in sanitation-related activities and programmes, including water harvesting, desalination, improving water efficiency, wastewater treatment and recycling and reuse technologies. Similar acute shortages of human resources are reported in the agricultural sector (irrigated farming and water conservation for rainfed farming). This shortage limits the countries' ability to achieve both water and food security goals in the face of climate change. When women have completed secondary education, incidence of diarrhoea would fall by 30% in low and lower middle-income countries (2013/4 EFA Global Monitoring Report, 2014).

The stories and achievements of two women who are sanitation champions in the quest to deliver affordable and innovative sanitation services are presented below (BMGF, 2018).

Lungi Zuma, eThekweni Water & Sanitation, South Africa Mrs Zuma began her career in sanitation as an MSc Engineering candidate at the University of KwaZulu-Natal. She evaluated the characteristics of sludge from pit latrines and urine diversion toilets. She has since transitioned from academia to practitioner at eThekweni municipality and currently works in research, testing and evaluating innovative faecal sludge management (FSM) technologies.



Mme. Faye Lena Tall, Sanitation Entrepreneur, Senegal Most of Senegal cities are not equipped with sanitation systems and women are considered as responsible for the hygiene of the family homes. Mrs. Tall started her career as a commercial bank agent. Following the restructuring of the banking system and many layoffs, she decided to choose a new direction upon seeing the need and opportunity for sanitation management. In 2002, she started her own business, a company called “Delta”, with 200 employees working in the communities of Dakar for low-cost pit latrines and septic tank emptying. In 2013, she created a firm called “Delvic Sanitation Initiatives” for faecal sludge management and then set up a private-public partnership with the National Sanitation Agency of Senegal (ONAS) to manage 4 faecal sludge management (FSM) treatment plants and to value faecal sludge through composting and the Omni Processor¹



¹ The Omni Processor is revolutionizing the faecal sludge processing industry by combining solid fuel combustion, steam power generation, and water treatment. It treats faecal sludge by drying the wet sludge and turning some of it into ashes. It produces electricity and purified water, and kills all pathogens without emitting harmful emissions.

4.3 SDG-5 and 4 – Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, and achieve gender equality and empower all women and girls

Access to education is still a challenge in Africa, with the highest out-of-school children rate in the world, accounting for half of the 59 million primary-school-age children out of school in 2010 (UNESCO UIS, 2013). Universal primary enrolment is more

than 90% in most countries. Nearly half of African countries have achieved gender parity in primary school. Five years of schooling is, for some African girls, the most education they can expect. In the past decade, the enrolment rate of girls of all ages has been catching up to that of boys. However, the gender gap persists. Twenty-four percent of the primary school-age girls are out of school compared to 18% for boys (UNESCO UIS, 2018). In sub-Saharan Africa, girls still face barriers to entering both primary and secondary school and 12 million girls (as compared to 7 million boys) are never expected to attend school (UNESCO UIS, 2009). Poverty is the biggest barrier to a girl's education. In West and Central Africa, if a girl has not entered primary school by age 10, chances are that she never will. 27.1 million illiterate females live in sub-Saharan Africa (UNESCO UIS, 2013).

5 Regional disparities

According to Henao *et al.* (Sustainable Development Goal Center for Africa, 2017), despite primary and secondary girl enrolment having improved substantially, there are still major impediments for women on the continent, basically access to equal education and economic opportunities:

- Women receive on average 11 years of schooling in North Africa (12.7 for men), 8.6 years in West Africa (10.4 for men), 11.6 years in Southern Africa (12.2 for men) while the average in the world for females is 12.2 and for males is 12.4. In 2014, average years of schooling were 5.4 in Central Africa and 4.8 in East Africa, significantly less than the 9.7 years expected in sub-Saharan Africa.
- Men earn on average 3.6 times more than their female counterparts in North Africa, 1.6 times more in West Africa, 1.63 times more in Southern Africa (UNDP-HDI, 2015).
- Average share of parliamentary seats held by women in 2017 was as follows: 22.3% in North Africa, 14.6% in West Africa, 18.9% in Central Africa, 27.6% in East Africa, 25% in Southern Africa (World average of 23.7%, and sub-Saharan Africa's average of 24%) (World Bank data, 2017). The proportion of seats held by women in parliament was the highest in Rwanda in 2018 (61%; 64 seats) (World Bank, 2019).

There are significant differences in the values of the Human Development Index (HDI), the Gender Development Index (GDI) and the Gender Inequality Index (GII) among and within the sub-regions. Data from the Africa Human Development Report 2016 (UNDP, 2016) are summarised below.

- With regard to the HDI¹, it was found that men are having a higher HDI value than women in all sub-regions. Women in East and Southern Africa have the highest achievements in terms of human development relative to men, followed

¹The Human Development Index (HDI) is an average measure of basic human development achievements in a country (long and healthy life (life expectancy), access to knowledge (mean years of education and expected years of schooling) and a decent standard of living (gross national income per capita)).

by North, Central and West Africa. Southern Africa has the highest female-to-male ratios (over 0.92), followed by East Africa (0.90).

- As to the GDI, which measures differences between male and female achievements in health, education and income, women in sub-Saharan Africa achieve, on average, 87% of male human development outcomes. The GDI of Central Africa (0.85) is slightly below the African average (0.87); women in Madagascar achieve up to 95% of the human development outcomes of men, while in Chad and in the Central African Republic, women attain only 77% of male achievements in education, health and income. The most significant variation between men and women is shown in the difference in income in all sub-regions, with North Africa having the most income inequality. However, there is gender parity in expected years of schooling in North Africa and the longest life expectancy at birth for both sexes among all the sub-regions.
- Concerning the GII, which measures gender inequalities in achievement in terms of reproductive health, education, political representation and labour market participation, the world GII value was 0.441 in 2017 (UNDP, 2018). The value for OECD (Organisation for Economic Cooperation and Development) countries was 0.186. Among developing regions, the GII value ranged from 0.270 for Europe and Central Asia, to 0.531 for the Arab States, to 0.569 in sub-Saharan Africa. It was around 0.53 for all Africa in 2015 and the target for 2025 is 0.4.

6 A story of progress in women's empowerment in former Ifriqiya – Tunisia

The story of the progress made in women's empowerment in Tunisia is presented as a case study to illustrate the long struggle Tunisian women went through to reduce inequality. This also happened with the support of the Head of the State, Habib Bourguiba, who took an effective step to eliminate inequality with the issuance of the Code of Personal Status in 1956. He ensured that the right laws and regulations, in support of women equality, were in place as well as means of implementation. The high level of women empowerment in Tunisia was reached in 2011 during the Tunisian uprising against dictatorship and corruption. Women had an effective participation in this uprising and demonstrations that led to the change of Government.

6.1 Legal and policy change in social, political and economic issues

Since independence in 1956, the constitution (1959) (recognising women as equals before the law), legislation and policies have evolved in ways that promote the principles of gender equality and eliminate gender-based discrimination in relation to health, education, labour conditions and political representation. The Code of Personal Status (1956) granted women equal rights in marriage and divorce, abolishing polygamy and repudiation, enacted a minimum age for marriage and ordered the consent of both spouses before marriage. Right to vote was obtained by women in 1957. Access to birth control was effective in 1962 and abortion was legalised by 1965. In 2008, Tunisia signed up to international commitments, including ratification of the

Optional Protocol to the UN Convention on the Elimination of All Forms of Discrimination against Women (CEDAW). Social policy has resulted in important advances in health and education for women and girls, and in legal rights that shape gender equity (Gribaa *et al.*, 2009; Kautsch, 2009).

6.2 Concrete gains in women's empowerment

Some concrete gains in women's empowerment have been achieved regarding access to health and education services and the labour market (Chambers and Cummings, 2014):

- Maternal mortality halved from 130 per 100,000 live births in 1990 to 56 in 2010.
- Fertility rates fell from 7.04 births per woman in 1960 to 2.2 in 2011 but a significant rural–urban disparity still remains with a total fertility rate of 2.6 and 1.5 respectively (Cochrane, 1995; Eltigani, 2009).
- An increase of girls' enrolment has been noticed at all levels of education since 1971 with primary reaching 100%, secondary from 38% to 94%, and tertiary from 6% to 45% (UNESCO, UIS, 2013).
- Gender gap has reversed with women's university-level enrolment rate in 2011 around 44.9% compared to 29.5% for men.
- There is a consistent rise of the school life expectancy for girls since early 1970s: from 4.9 years in 1971, to 9.3 years by 1990 and to 15.1 years by 2010. An increase from 11.3 to 14.3 years has been registered for boys over the same period.

6.3 Social outcome indicators

There are regional disparities in levels of education with the proportion of the labour force with no education in Grand Tunis being 3.7%, compared to 26.2% in Sidi Bouzid, 25% in El Kef, 21.7% in the northwest, and 21.5% in the mid-west (Boughzala and Hamdi, 2014). Women are increasingly in a paid employment in various professional positions as lawyers, doctors, dentists, pharmacists and veterinarians and biologists. However, in the last quarter of 2013, only 25.7% of women were active in the labour market against 74.3% of men. While the overall unemployment rate is 15.3%, it is only 12.8% for men in contrast with 21.9% for women. In addition, these rates are higher for university graduates with 31.9% unemployed (21.7% for men and 41.9% for women). There is a significant increase in the number of women in government. However, women remain underrepresented in executive roles both at central and regional levels. Moreover, the higher up in the hierarchy, the lower the proportion of women. In local governments, women represent only 10–20% of positions; in 2010, there were only five female municipal council presidents (Gribaa *et al.*, 2009; EU, 2010). Women's organisations are shaping social and political transformation.

6.4 Political voice and women's empowerment

A significant change has been noticed with time in a number of indicators as reported by UNESCO (2009), Gribaa *et al.* (2009); Goulding (2010) and Chambers and Cummings (2014). The vast majority of girls in Tunisia are now enrolled in secondary school with 94% in 2011 compared to 19% in 1980.

In public office in 2005, the percentage of female judges was 29%, i.e. 509 vs 1255 male judges. In parliament, a similar increase in the number of women elected was observed from 4% in 1989 to 31% in 2011.

6.5 Key drivers of change

According to Chambers and Cummings (2014), the key drivers of change have been the following:

- The nature of post-independence political dynamics and elite arrangements.
- The political leadership, which has consistently supported policies and reforms that favoured women's gender equality over a long period.
- A combined effect of policy and legal change in the socio-economic sphere (improved access to health, education and paid employment for women and girls).
- An emergence of women's political and social mobilization for change.

The principle of gender equality is embedded in the Tunisian Constitution of 2014 and quota on gender parity on party electoral lists were included in the law in 2011 to ensure that women represented at least 50% of the candidates elected to draft the constitution (Goulding, 2011).

6.6 The challenges ahead

There are a number of challenges ahead such as patriarchal social norms (in which gender-based discrimination persists in public and private life) and the role of religion in social and family life (Chambers and Cummings, 2014). There are also socio-political and institutional barriers. While marriage between a Muslim woman and a non-Muslim man is now permitted, equal inheritance for daughters – a concern which is not religious but economic – considered as key to Tunisian women's empowerment, will take time, commitment and education to become a law. Despite legislation on equality in employment, women's wages remain lower than men's in the private sector. Women's political participation remains limited and their presence in legislative and executive functions is still marginal.

7 Gender mainstreaming requires change

In order to achieve gender equality and empower all women and girls, a “nothing about them without them” approach should be adopted with meaningful and inclusive participation in decision-making and partnerships. Gender equality and inclusion should

be made a core business goal. Gender and inclusion analysis should be conducted at all levels. Equal access to and control of resources should be ensured.

The actions items that were agreed upon during a meeting held in Kigali, the 2016 POWWER Workshop, are quite relevant and worth mentioning (Water-First-Workshop-Summary, 2016):

1. **Educate public officials and policy makers.** There is a need to raise the awareness of public officials and policy makers on the central role played by women for green development and growth. National leaders must recognise that the talents, energy and expertise of both men and women are needed to address the complex challenges of development. More trained professionals are required. Gender-neutral approaches to recruitment and training for technical, social, service and legal careers in various fields are necessary, for all qualified citizens to participate and contribute equitably to their country's challenges.
2. **Empower women and girls to participate and lead.** Education of young girls must be prioritised. Young girls should be trained for various sectors careers, especially those in science and technology, and should be mentored to pursue leadership positions. More women should be empowered to pursue careers and career success, beginning with the encouragement of girls to enter science and technology fields. Women should be economically, legally and politically empowered to pursue and be successful in a wide range of leadership roles. This effort requires creation of laws, policies and social awareness programmes and will lead to an increase in women's access to and control over resources and services.
3. **Emulate best practices and role models.** Women should be actively recruited and promoted for leadership positions. They would provide new perspectives in regional and national development dialogues, and policy design and implementation. The next generation of women leaders needs access to successful practitioners and professional networks today. Both men and women in leadership and professional positions should be tapped to serve as mentors, role models and champions to ensure the retention and success of young women in their careers.

8 Conclusion

As stated in the Africa Human Development Report (UNDP, 2016), "if development is not engendered, it is endangered". It is therefore important that the Agenda for Action proposed in that report, with seven courses of action to accelerate gender equality and women's empowerment, is implemented:

1. Adopt effective legislative and policy reforms for women's empowerment using gender equality as the organising policy lens for all development planning and implementation.

2. Develop capabilities and accountability to increase women's participation and leadership in decision-making at all levels of society.
3. Address the root causes of discriminatory health and education practices, breaking down harmful social norms and cultural barriers that impede gender equality.
4. Support equitable access to land, financial services, equal pay and equal employment for African women including establishing an African Women Investment Bank and opening Women Investment Windows in Development Banks.
5. Create more capable, socially responsive, equally representative and agile institutions that lead to a more equitable and inclusive society.
6. Pursue gender responsive analysis and development monitoring as well as more effective sharing of knowledge, tools and experiences across countries and regions.
7. Forge stronger alliances among all segments of society (public and private sector institutions, civil society organisations . . .) towards a common agenda for action to accelerate gender equality and women's empowerment.

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Sudanese women and the current uprising

Les femmes du Soudan et le récent soulèvement

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Abstract: In the history of Sudan, women had a prominent role in ruling and sharing in running the country. Women education started as early as 1900 when Italian Missionaries opened three schools for girls' education. Later on, a Women Teachers College and a Nursing College were started by the Colonial government. The number of women students increased with more schools and they were able to join the Gordon Memorial College which became the 1st. University of Khartoum after independence in 1956. Since 1970, many Sudanese migrated to the Gulf countries for better jobs. An increased number of women were employed in the civil and private services. New universities, both public and private, were opened by 1992 where women were in higher numbers than men. The country had three military governments and three democratic rules since 1956, it suffered from many economic problems and conflicts. A recent uprising in December 2018 culminated in ending the last military government of 30 years in April 2019. A new civil government is currently being established for a transitional period of 39 months to be followed by elections. Women had a prominent role in the uprising and will hopefully have a 40% representation in the new civil government and will positively participate in the sustainable development of the country.

Résumé : Dans l'histoire du Soudan, les femmes ont joué un rôle de premier plan dans l'administration et le partage de la direction du pays. L'éducation des femmes a commencé dès 1900 lorsque les missionnaires italiens ont ouvert trois écoles pour l'éducation des filles. Plus tard, le gouvernement colonial a mis sur pied un Women Teachers College et un Nursing College. Le nombre d'étudiantes a augmenté avec le nombre d'écoles et elles ont pu rejoindre le Gordon Memorial College qui est devenu la première université de Khartoum après l'indépendance en 1956. Depuis 1970, de nombreux Soudanais ont émigré vers les pays du Golfe à la recherche de meilleurs emplois. Les femmes sont de plus en plus nombreuses à travailler dans la fonction publique et dans le secteur privé. De nouvelles universités, tant publiques que privées, ont été ouvertes en 1992, où les femmes étaient plus nombreuses que les hommes. Le pays a eu trois gouvernements militaires et trois régimes démocratiques depuis 1956, il a souffert de nombreux problèmes économiques et de conflits. Un récent soulèvement en décembre 2018 a culminé avec la fin du dernier gouvernement militaire ayant duré 30 ans, en avril 2019. Un nouveau gouvernement civil est en cours d'établissement pour une période transitoire de 39 mois qui sera suivie d'élections. Les femmes ont joué un rôle de premier plan dans le soulèvement et, espérons-le, elles représenteront 40% du nouveau gouvernement civil et participeront positivement au développement durable du pays.

1 Sudanese women's role in the sustainable development of the country: Historical perspective

Sudan is a country with a very old culture going back more than 5000 years in history, fairly well documented in the Northern parts of the country and along the banks of the Nile.

Historically, women have had a role almost equivalent to that of men in the development of Sudanese life because they participated in wars and led armies, shared in the rule and running of the country. There were about 49 Nubian queens (Candace/Kandak) who participated mostly as wives of the kings, and only 11 of them were sole rulers and leaders of armies.

This rich history and culture of women's involvement continued through the Meroian era and the Christian kingdom till the establishment of the first Islamic and Arab Fung kingdom in the 16th century. Then the main role of women was limited to being wives, mothers and slaves. A few reached a ruling status in some parts of the Fung kingdom.

In the 19th century, during the Turks invasion of Sudan and the Mahdist revolt, many women were renowned for participating in the resistance and supporting men with bravery poetry. However, the status of women regressed to total domination and dependence on men. The spread of Islamic education transformed the social and cultural traditions to create a clear separation of the roles of men and women. This brought a clear distinction between the family members, mostly shown in the separation of the quarters for males and females inside the house. The teachers of religious Islamic education disseminated an Arab male domination on culture with a dwarfing of the role of women in the society. Formal education for girls was absent except in a few families who were keen to teach very limited numbers of their female members.

In 1900 -1902, three Italian Missionary schools were opened in Omdurman and Khartoum and about 80 girls were enrolled. The first national girls' education was started by Babiker Badri in Rufaa where he established a girl's school in 1907. He also established the Alahfad girls schools in Omdurman in 1917, which later developed into Alahfad College and then into the first university for women in 1966. This university is still the only women university in Sudan and conducts many courses related to women's community development and family planning in addition to medical sciences.

In 1921, the Women Teachers College was opened in Omdurman, a colonial government college to train women teachers for the girls' schools which were increasing in number. Similarly, in 1925, the first Nursing College was established. In 1945, the first girls' secondary school was opened in Omdurman, a colonial government school, and in the same year, girls having graduated from the missionary schools enrolled in the Gordon Memorial College followed by others from the Omdurman national school in 1949. The Gordon Memorial College became the University of Khartoum after the Sudan Independence in 1956.

By the year 1960, there were 52 female students (4.3%) and 1164 males (95.7%) at the University of Khartoum. Interestingly, by the end of 2017, the number of girls had increased to 12,693 (62%) and the number of female teaching staff members was 703 (36%). This was also happening at many Sudanese academic institutions, both public and private, which increased in number to more than 112 institutions established in different parts of the country, mainly in the capital Khartoum and other big cities.

The fast increase in opportunities for education, mainly at secondary and university levels, provided women of Sudan with opportunities to participate in the public and political life even before the country received independence. In 1952, Sudanese women were given the right to vote, which was restricted to those who had completed secondary schooling and above. By 1964, Sudanese women were able to vote and be elected for Parliament. Ms Fatma Ahmed Ibrahim was the first woman to sit in Parliament in 1965, and Ms Nafesa Ahmed Alamin, who became Deputy Minister of Youth, and then Dr Fatma Abdel Mahmoud, who was the first Minister of Social Affairs and Sports in 1975.

During the years from 1970 till present, there were extensive changes in the Sudanese society and its ways of life due to several economic and political factors. The rate of migration was high among Sudanese men, mainly among scholars, moving to the Gulf States, Europe and the United States, for better jobs, while there was less migration of female scholars until the turn of the century when it increased.

The exodus of Sudanese men from different professions created a gap in the civil and private services which were filled in by women. With the large number of female university graduates during the past 20 years, the unemployment rate among females became higher than for males. Women of Sudan were heroic enough to occupy professions never considered to be feminine by their mothers and grand-mothers. Sudanese women are the majority in the education system and social services. Many community development organizations, including and led by women, were established and expanded their activities in the rural and urban areas in support of those who had missed out on education.

Literacy (defined as ability to read and write by the age of 15) among men of Sudan is almost 83% and 68% among women (2015 est.). The education system was affected by a change in school years and the use of Arabic at the primary and secondary levels as a rule, while English was started later at the secondary level. Some of the higher education colleges were taught mainly in Arabic. Consequently, the skill of speaking and writing English as a second language was greatly affected for many university graduates.

Children throughout Sudan faced several difficulties when it comes to receiving a formal education. As a result, more than 40% of children between the ages of 5 and 13 were not in school, and more than 1.5 million of them were girls. Of those in school, more than half a million were at risk of dropping out. Nomadic and displaced children and those in war-torn areas were at greater risk of exclusion, with girls often facing a higher risk of not completing their formal education.

The 2010 Sudan Household Health Survey shows that 53% of children in the poorest areas are not in school, compared to 4% in the richest areas. In some areas, these estimates are increased due to poor educational infrastructure, insufficient or non-existent classrooms, scarcity of learning materials such as textbooks, the lack of properly trained teachers and teaching materials, as well as school charges and fees that prevent the poors from sending their children to school.

In rural areas, mostly affected by conflicts, drought and weak economy (e.g. in Darfur), women have become the sole provider of food for their families and the lifeblood of their communities. The extension of water scarcity and poor vegetation has resulted in low agricultural productivity and subsequently, competition and struggle over the few available natural resources. In the rainy season, women in primarily farming areas cultivate crops to feed the family and to sell, while in winter, they focus on growing fruits and vegetables, and throughout the year they participate in animal husbandry, critical for the livelihoods and well-being of their community. All over the country, women's presence is also evident in local markets where they operate small businesses such as food-selling and tea stalls, especially among those who have migrated to the peripheries of big cities.

Sudanese women excel in fields like journalism, radio and television media, and form a majority in primary schools education and community services. The women participation in science and research-related disciplines (e.g. health and agricultural professions, technology and engineering) in Sudan makes up almost 40% of the workforce, a much higher percentage than in many other countries in the developing world.

2 Women and the current up-rising in Sudan

In 1989, the democratic rule of Sudan was taken over by a military Islamic group in a bloodless coup. During the past three decades, Sudanese women have lost most of the constitutional rights they had acquired since independence. The country was mostly run by what was assumed to be Islamic laws adapted to fit the traditional Arab/Sudanese customs. Women were very much affected by male domination and were victimized by many social practices, e.g. FGM (female genital mutilation), early marriage of girls, violence, harassments and their lack of employment rights. In 1991, the Social Order Law was imposed to restrict freedom of women, mainly relative to their attire and attitude in public, giving the right to the enforcer to decide and take them to court and a demeaning trial. Under this law, working females, university and school-girls were forced to wear long skirts and veils, an assumed Islamic dress. Many females were lashed in public for wearing jeans and not covering their hair.

Resistance against the ruling party had been accumulating over the past years, until a more organized up-rising broke out in December 2018. Mass popular protests denouncing the political and economic situation in Sudan started from some of the big cities and then intensified in the capital Khartoum. Peaceful demonstrations, mostly composed and organized by youth using the Internet and social media for communication, erupted from universities, schools, residential areas and markets. The mottos of the non-violent rallies were demanding freedom, peace and justice and a complete change of government.

The peaceful rallies have been met with unexpected and frequently deadly force by government authorities and anti-riot police. Participation of women and girls in the demonstrations was amazing, almost equal to that of males, in spite of the tear gas and brutal beatings. Females were equally detained and savagely beaten by the security police. Most of them were threatened with sexual harassment and rape if they continued participating in the rallies and cases of rape were reported and documented.

Photographs of the demonstrations and violations of human rights in detainment were taken using mobile phones. A network of females using social media, who called themselves “Minberchat” (literally it means Chat Forum... but in Sudanese Arabic it means ‘easy-going girls’) provided detailed personal information about members of security police who assaulted the demonstrators and tortured the detainees. This group of females started as a social network of women and efficiently became an information support for shaming security members.

The demonstrations climaxed on 6 April, and protesters occupied the square in front of the military headquarters and sat-in chanting and demonstrating to demand that the army forces the Albashir President out. On April 11, the military announced that the President Albashir had been ousted and a council of military generals assumed power to stabilize the country. The seven-member Transitional Military Council (TMC) led by Lt-Gen Abdel Fattah Burhan claimed to ensure order and security and promised not to disseminate the protesters by force.

Occupation of the square continued and demonstrators demanded that a civil government should be established. Negotiations were started between the Freedom & Change Forces (F & CF), which were heading the demonstrations and formed of a coalition of several professional unions and groups, and the TMC. The negotiations process was extended due to the obscured connections of the TMC with the ousted regime members and the different security forces and militia who were responsible of assaulting the demonstrators in Khartoum and other major cities of the country.

On the dawn of June 3rd, the 29th day of the fasting month of Ramadan, an atrocious attack by forces in uniform (Rapid Support Militia Forces) equipped with heavy machinery and weapons challenged the pro-democracy demonstrators’ camps in the sit-in and cleared them from the area. Tents were burned down, around 120 people were shot and much more were wounded and missing. Extensive thrashings and several cases of rape, of both men and women, were reported. The situation was similar to the notorious atrocities of the “Janjaweed” in the western region of Darfur. The responsibility of the massacre was on the TMC and claims of who planned it and gave the order to shoot were dubious.

Negotiations with the TMC were curtailed and demonstrations were aflame again in many cities, mainly in the three towns of the capital Khartoum. Internet connectivity was cut from June 3rd for about a month and the TMC announced that it is a threat to the country’s security. Yet, demonstrations continued and the rebellious groups managed to organize people where public strikes were arranged. A one million person demonstration was organized in Khartoum and most of the other cities on the 30th June followed by a two-day public strike which shut down the country completely.

Demonstrators were able to video many incidents of the atrocities committed during the sit-in disperse which came out in the international media incriminating the TMC and Militia Forces.

The Sudanese in Diaspora in many parts of the world arranged many similar parades in support of their home country. Arbitration by the African Union and Ethiopian Prime Minister assisted in getting the Freedom & Change Forces and the Transitional Military Council back to resume negotiations and reach an acceptable plan for a transitional civil government with military representation. The agreement was initiated on the 4th of August and fully endorsed on the 17th of August, for the transitional civil government to lead the country.

It was agreed that the transitional government will be for 39 months extendable and to be followed by general elections. The transitional government will be composed of three councils:

- A Supreme Council of eleven members : 5 FCF + 5 TMC + 1 national figure. The SC will be headed by the TMC for 21 months and followed by the FCF for 18 months to supervise the government during the transitional period.
- A Ministerial Council of a Prime Minister selected by the FCF who will select 20 ministers from nominated figures for the different ministries. The selected Prime Minister, Dr. Abdalla Hamdok, is a prominent Sudanese economist who worked at the African Union.
- A Legislative Council (Parliament) of 300 people (200 selected by FCF and 100 by TMC).

3 Women in the new civil government

Participation of women during the uprising was equal to that of men. The Freedom & Change Forces constantly highlighted the role of women and announced that there will be a 40% representation of women in the selected parliament. However, only one woman (daughter of Alsaddig Almahdi of the Umma Party) participated in the negotiations with the Transitional Military Council, while many women participated in the supporting committees and did not show up in the media except for very few.

One woman, Dr Aisha Musa, was nominated by the Freedom & Change Forces as member of the Supreme Council, A Christian advocate, Ms Raja Nicola Eissa Abdel-Masih, was selected as the national figure to represent the Coptic minority of Sudan.

The Civil government members, 18 ministers, were announced on the 5th of September. There are 4 women ministers, as follows:

- Minister of Foreign Affairs: Ex- ambassador Ms Asma M. Abdalla,
- Minister of Higher Education and Research: Prof. Intisar Alzain, an archaeologist, University of Khartoum,

- Minister of Social Development: Ms Dina Elsheikh Mahgoub, Corporate Social Responsibility expert,
- Minister of Youth & Sports: Eng. Walaa Albushi, athlete and chemical engineer.

In conclusion, the Sudan recent uprising, mostly organized and composed of youth, both females and males, has given hope to many Sudanese that a new civil government will eventually succeed in leading the country. In spite of being a peaceful movement for democratic changes, and a motto of “Freedom, Peace and Justice”, hundreds of martyrs lost their lives and thousands were wounded and mentally traumatized.

The Legislative Council (Parliament) of 300 people is not yet formed. The new Prime Minister announced on several occasions that women from the different states will represent 40% or more in the new government in recognition of their role in the uprising and that they will equally participate in rehabilitating the country and building the New Sudan.

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The declaration from the International Forum on Women and Sustainable Development in Africa

La déclaration du Forum international sur les femmes et le développement durable en Afrique

Jackie Kado

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1 Introduction

The International Forum on Women and Sustainable Development in Africa was held in Dar es Salaam, Tanzania on 8-10 March 2018 and was hosted by the Tanzanian Academy of Sciences (TAAS) at the Julius Nyerere Convention Centre with the French Academy of Sciences and in partnership with the Bill and Melinda Gates Foundation, Sanofi Espoir Foundation, the French Development Agency, French Institute of Research for Sustainable Development, the Inter Academy Partnership, the French Embassy in Tanzania and Acacia Company in Tanzania. The forum made it possible for the science community in Africa to mark the International Women's Day celebrated annually on 8 March. The main focus of the event was the contribution by women to social and economic progress in African countries towards realizing the Sustainable Development Goals (SDGs).

The challenges encountered by women in their pursuit to care for the family, educate, improve access to water, energy, healthy food, combat negative effects of climate change, sustain a growing, young and under-employed population and develop their economic and commercial activity were highlighted. Not forgetting the achievements already made in the continent on these matters, emphasis was further placed on accelerating the realization of the SDGs through input by African women in various

sectors. Ultimately, for this to happen, a collective effort is required and absolutely critical with *all-hands-on-deck*; with the participation of both male and female genders of the African population. The forum was interactive and balanced in representation of the delegates, who were drawn from academia (young and senior scientists), media, the private and public sectors as well as from non-governmental and community based organizations.

2 The Sessions

Session 1: The opening ceremony accorded the conference organizers and hosts an opportunity to highlight their expectations and supplemental roles in adding value to the theme. This session culminated with an Opening Keynote Address on the topic “*Development and Women: What can Africa do differently by 2030?*”

H.E. Aïcha Bah Diallo, *Former Chair, Forum of African Women Educationalists (FAWE) and Former Minister of Education in Guinea Conakry*

Session 2: The topic on Contribution by Science enabled speakers to discuss the economic implications of development with a focus on the demographic dividend question for Africa. This session also included a panel discussion on the topic ‘*The generation that could transform Africa has already been born*’, where civil society champions of Demographic Dividend launched a new and rebranded narrative that aimed to demystify the concept and leverage it to increase political and civil society support for key advocacy asks.

Session 3: The role of research institutes, foundations, funding agencies and industry was discussed by conference partners stating relevant aspects of their work that support women in realizing developmental goals. This session enabled various organizations identify synergies and networking opportunities that would continue to spur both involvement and inclusion of women in matters of development.

Session 4: Education and Advocacy was tackled through the lens of social empowerment. It was agreed by session speakers and panelists that imparting appropriate knowledge and skills on SDGs accountability and advocacy would enhance the contribution of women and community-based organizations in SDG-realization.

Session 5: Examples of Successful Actions were discussed *via* a talk-show where panelist engaged with the media on how to demystify myths and stereotypical notions around the value of educating and including women in Africa’s development agenda. The session concluded with two parallel sessions. Parallel Session 1 on ***Local and National Roles of Women in Development***, illuminated the need to uphold and improve women’s rights by taking into account international conventions, the need to encourage balance between genders at all levels of administrative and political structures, as well as in the private and public sector. Local initiatives that promote empowerment of women in local economic development (e.g. professional training, access to credit, etc.) were also highlighted, as well as the crucial role played by men. Parallel Session 2 on ***Reproductive Health and Development*** tackled various aspects of health infrastructure that needed to be improved, the training of personnel dealing with questions of reproductive health and sexuality and provided recommen-

dations on how to reduce infant and mother mortality. The speakers also discussed how access to contraception had a direct link to sustainable development.

Session 6: Conclusions and Closing included a Closing Keynote Address on "*Mainstreaming gender in Africa's policymaking to deliver Agenda 2030*" by **Prof. Akiya Bahri** (National Agricultural Institute, Tunisia and Former Coordinator of the African Water Facility at the African Development Bank). It was agreed that Africa must address *Agenda 5 on Gender Equality* as a crucial and cross-cutting component of all the other SDGs. Lessons learnt and valuable experiences to this end were discussed. The Forum concluded by discussing the synopsis of the deliberations after which the International Forum's Declaration was presented, discussed, amended and adopted by participants. The content of the Dar es Salaam Declaration is documented below.

3 The Declaration



Femmes et Développement Durable en Afrique

Déclaration de Dar es Salaam, 10 Mars 2018

Un appel à l'action

À l'issue du Forum international « Femmes et développement durable en Afrique » organisé du 8 au 10 mars 2018 à Dar es Salaam (Tanzanie) par le Réseau des académies scientifiques africaines (NASAC), les participantes et les participants ont tenu à présenter la déclaration suivante et lancer un appel à l'action afin de renforcer le rôle des femmes pour le développement durable en Afrique:

Constatant:

- les atouts dont dispose l'Afrique sous forme de ressources naturelles, particulièrement agricoles, énergétiques et minières, de capital humain et d'avancement en éducation primaire et supérieure,
- la croissance démographique rapide et les croissances économiques différenciées du continent africain,
- la persistance de foyers d'instabilité politique dans certaines régions,
- les risques liés aux changements climatiques,
- l'augmentation du nombre de jeunes,
- la persistance d'inégalités de genre dans différents secteurs,
- qu'en l'absence de bonnes gouvernances, la pauvreté et les inégalités vont se maintenir.

Considérant que:

- la communauté scientifique africaine doit s'engager dans l'élaboration d'expertises pour favoriser la croissance économique,
- l'égalité des droits entre les femmes et les hommes implique un libre accès à une éducation globale de la sexualité, aux soins médicaux, à l'emploi, aux ressources économiques et financières, ainsi qu'aux responsabilités politiques et économiques,
- le rôle des femmes dans la vie sociale et économique étant vital, leur implication dans le processus de développement économique, social et environnemental des Nations est une évidence et une nécessité,
- la forte croissance démographique en Afrique subsaharienne génère des questionnements des États sur les meilleures options pour éviter le chômage de masse des générations montantes,
- les violences et les discriminations envers les femmes persistent malgré de nombreuses initiatives.

En appellent aux responsables politiques et aux institutions internationales à:

- fournir un meilleur accès à l'eau et aux ressources énergétiques pour alléger le fardeau qui pèse sur les femmes,
- favoriser les efforts d'éducation et d'autonomisation appropriées pour tous, en particulier les filles, à l'école maternelle, au primaire, au secondaire, dans les écoles techniques, dans les universités et les centres de recherches, ainsi que dans l'apprentissage professionnel et la formation permanente,
- inscrire, aux âges appropriés, le genre, l'éducation sexuelle et la santé de la reproduction dans les cursus scolaires et dans les programmes d'information du public,
- améliorer la formation et l'employabilité des jeunes, en particulier celles des filles et des femmes,
- offrir un environnement favorable à l'industrie et aux employeurs pour fournir des ressources et déterminer des mécanismes de nature à promouvoir les capacités d'éducation, de formation et de recherche pour les femmes en Afrique,
- assurer l'accès à des services de planification familiale dédiés au genre,
- assurer l'égalité des salaires et de l'emploi et mettre en place, particulièrement dans les zones rurales, des systèmes de crédit innovants pour garantir l'autonomisation financière des femmes et l'accès à la terre et à l'eau,
- prendre toutes les mesures nécessaires pour renforcer les initiatives locales déjà existantes permettant l'insertion des femmes dans le développement économique, social et environnemental, améliorer leur statut légal, par des mesures législatives efficaces, des réformes politiques et encourager leur participation à l'élaboration de politiques démocratiques, paritaires, ouvertes à toutes et tous, et
- mettre en place des mécanismes pour établir et soutenir de bonnes gouvernances.

Signé au nom de la NASAC par:

Président: Prof. Mostapha Bousmina

Secrétaire général: Prof. Barney Pityana



BILL & MELINDA GATES foundation



SANOFIESPOIR foundation
INSTITUT DE FRANCE
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on
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