REPORT ON THE ACTIVITIES OF AFRICAN WOMEN IN MATHEMATICS ASSOCIATION (AWMA) JULY 2013 – JULY 2015

Background Information

Since Mathematics is considered as the mother of all Science and Technology, the main aim of AWMA is to bring together women from various countries within the African continent to give them a platform for presenting their work, discussing the situation and status of women in mathematics in each of their countries as well as update the data on African Women in the Mathematical Sciences. In order to contribute to increasing the skills of the human capital capacity of the African continent it is critical to realize the importance of promoting mathematics amongst the African population. However the number of mathematicians in Africa is small and moreover the proportion of women in mathematics is extremely low. For this reason the African Women in Mathematics Association (AWMA) was formed to contribute to the development of mathematics and women in mathematics.

The creation of AWMA was first discussed at the workshop held at the University of Ouagadougou, 26th -27th October 2012, under the auspices of AMUCWMA which is the African Mathematical Union (AMU) Commission for Women Mathematicians in Africa. This came to fruition at the workshop held at AIMS, Cape Town, South Africa from 17th July to 19th July 2013 where the AWMA Constitution with twenty (20) articles was formed and adopted during the round table meeting.

The main tool for implementing the Association statutory goals is the general meeting. Thus AWMA has a general meeting at least once every two years. The general assembly is also held every second year during the general meeting. The Officers of the Association are the President, five (5) Regional Vice Presidents one from each region of Africa, the Secretary, the Vice Secretary, the Treasurer and the Publicity and Information Officer. The Officers of the Association are elected at the General Meeting by a secret ballot. Any woman either at the general meeting or otherwise involved in AWMA can also propose members. General Assembly members take office upon election for **four (4) years.** A member may be eligible for another term of office but no member shall serve at the same post for more than two consecutive terms. The Officers are composing the standing committee. The duties of the officers are outlined in Article 10 of the constitution.

AWMA's first General Assembly will be held during the 16th to the 19th of July 2015 workshop which was already announced in the flyer and sent to everyone through the mailing-list few

months ago. During the general assembly AWMA logo and AWMA website will be adopted as stipulated in **ARTICLE 18 of the AWMA constitution.**

Since the officers were elected in 2013 for 4 years, they do not have to be renewed in 2015.

Note: the constitution of AWMA (in English and in French) can be consulted on the AWMA website (http://africanwomeninmath.org/)

I. The President's Report (Prof. Marie Françoise Ouedraogo, Burkina Faso)

The AWMA President was involved in the following AWMA:

I.1 Participation to EWM congress

AWMA has been invited to participate in the 16th congress of EWM (European Women in Mathematics) wich was held from 02 to 06 september 2013, at Bonn, Germany. AWMA representatives at this congress were Prof. Josephine Guidy-Wandja, Vice-president of Western Africa and Prof. Yirgalem Tsegaye, Vice-president of the Eastern region.

I.2 Participation in ICWM

AWMA has been invited to paticipate in ICWM 2014 (International Congress of Women Mathematicians) held on 12 and 14 August 2014 in Seoul, South Korea. The president of AWMA was a member of the ICWM-forum, during the panel session "Mathematics and Women: Different Regions, Similar Struggles". The panel had 8 participants from all parts of the world. More than twelve members of AWMA attended the ICM (International Congress of Mathematicians), thanks to the NANUM together, the project of grants proposed by South Korea to allowed 1000 participants from developping countries to attend ICM.

I.3 Participation to CWM

In order to prepare and organize ICWM (International Congress of Women Mathematicians) 2014, a committee «WiM: Women in Mathematics» was created by IMU (International Mathematical Union). This committee has created webpages http://www.mathunion.org/cwm/ to promote women mathematicians worldwide, and put together information about all associations of women mathematicians. After ICWM 2014, IMU EC stablished a Committe for Women in Mathematics (see the Terms of references of IMU CWM at http://www.mathunion.org/cwm/). The president of AWMA is a member of CWM.

I.4 Participation in « journée Femmes mathématiciennes africaines »

A meeting « Mathématiciennes africaines » has been organised by the association « femmes & mathématiques » on the 30th of May 2015 which took place at the IHP (Institut Henri Poincaré) around the African women mathematicians from the diaspora, working in France. The president of AWMA gave a lecture on « AWMA: **une association au service des femmes mathématiciennes africaines»,** introducing AWMA and its objectives.

I.5 AWMA website creation

During her stay at Paris, the president of AWMA worked with Prof. Marie-Françoise Roy on the creation of the website of AWMA. This website is financed by the CWM group, designed by Bruno Pelvillain a specialist of websites who also design the website of EWM, and the content was posted by Marie Françoise Ouedraogo, president of AWMA and Marie-Françoise Roy, chair of the CWM group. The website adress is http://africanwomeninmath.org/ and is functional. The general assembly of AWMA in Kenya on Friday 17 july will be invited to approve the website.

AWMA Presentations

AWMA's support is part of CIMPA activities and AWMA is presented at every CIMPA school in Africa (by the CIMPA representative).

Moreover, Prof. Marie-Francoise Roy had the opportunity to present AWMA in various circumstances over the period in the following countries:
- in Africa Libreville (Gabon), M'Bour (Sénégal), Tunis (Tunisia) and Yaounde (Cameroun)
- in Europe at Konstanz University (Germany), Santander (Spain)
AWMA support is part of CIMPA activities and is presented at every CIMPA school in Africa (by the CIMPA representative).

II. Report on the Activities of Western Africa by Prof Josephine Guidy-Wandja, AWMAVice President

 Prof Josephine Guidy-Wandja represented AWMA at the General Meeting of EWM at Bonn, Germany from 2 to 6 September 2013.

II.1 Conference at AIMS-Cameroon

She also participated in the Conference at AIMS-Cameroon on the 15th December 2014. The theme of the conference was « Les filles et les mathématiques ». She talked about the creation of AWMA in July 2013 at AIMS-Cape Town in South Africa

II.2 Information on AWMA

This was made by contacts and emails to some male or female colleagues, from some Universities of western Africa. She also did some interviews on TV or radio, in Côte d'Ivoire and some African medias to promote AWMA and to sensibilise in the creation of local associations of women in mathematics

II.3 A project of creating Women in Mathematics Association in Togo

This project was done with the help of *Mrs Boyodé Monique épouse Kefféto,* teacher of mathematics at Lycée Moderne de Sokodé (Togo).

II.4 Association des Jeunes Femmes et Mathématiques (AJFM)

AJFM was created in the Department of Mathematics and Computer Science of University Felix Houphouet Boigny. AJFM has more than 50 members with 3 PhD students. The president of AJFM is Koffi Adjoua Stanille. Contacts were established with some directors of Mathematics Departments of Universities of West Africa to help young women in Mathematics to create associations similar to AJFM.

II.5 Nigerian Women in Mathematics (NWM)

The inauguration of the association of the Nigerian Women in Mathematics (NWM) took place on the 8th of July 2014 at the Department of Mathematics, University of Ibadan and it was a success. The election to various responsabilities took place and the results are as follows:
President: Professor O.O. Ugbeor University of Ibadan
Vice President: Professor F.O. Akinpelu LAUTECH Ogbomoso
Secretary: Dr. D.O. Makinde OAU Ile-Ife
Assistant Secretary : Dr. O.A. Fadipe-Joseph Unilorin
P.R.O : Dr. Zamrat A. Adeboye Kaduna Poly
Treasurer : Dr. R.B. Ogunrinde Ekiti State
Financial Sec. : Dr. Nkem Ogbonna Michael Opara

III.   Report on the Activities of Eastern Africa by Yirgalem Tsegaye, AWMA Vice President

Prof Tsegaye represented AWMA at the General Meeting of EWM at Bonn, Germany from 2 to 6 September 2013.

III.1 Organize East Africa region

The region's main goal was to organize ourselves under East Africa and serve in the region as per the objectives stated in our AWMA constitution. This allowed them share experiences and tackle problems together, giving way to a larger number of girls to develop interest and do mathematics. She contacted different universities in East Africa, in search of ladies who are in the field of Mathematics. They tried to contact people in countries like Sudan,

Somalia, Djibouti, Eritrea, and also have browsed the internet, though for now what they have got is not satisfactory. They have AWMA members in the rest of the region (Burundi, Rwanda, Tanzania, Kenya and Ethiopia) and what remains is to start with what they have, while they continue to inquire and update their list of members.

III.2 Organize the Kenya Women in Mathematics

As far as their members in Kenya are considered and as per there conversation (through email) with AWMA's Vice Secretary: Winniefred MutukuWinnie (Kenya), they have had a number of gatherings to establish Kenyan women in Mathematics. Some activities related to mathematics education have also been going on there.

III.3 AMUCWMA/AWMA workshop 2015

Kenya is hosting AMUCWMA/AWMA workshop 2015 at Navaisha Kenya, 16-18 July 2015. The upcoming conference in Kenya, will allow us to meet and prepare some solid plans as to how we can work together to promote mathematics among young girls, school teachers and the like. Not only this, but in the long run, they also like to work hard towards the solution of some serious problems that are hindering African girls to go to school in their region.

III.4 Organize the Ethiopian Women in Mathematics

Prof Tsegaye's effort to organize the Ethiopian Women in Mathematics, has also helped in reactivating the Mathematical Association of Ethiopia which was nonfunctional for the last three or more years. She has been assigned to do it, and will soon be done with the formal processes of the establishment of both associations. Though the formalities are on process, the Ethiopian Women in Mathematics has about 30 founding members, of which 10 are from the higher education institutions and 20 among high school teachers.

III.5 Promoting Mathematics among young girls

Promoting Mathematics among young girls has been taking place in different high schools in the region. Now that Prof Tsegaye represent AWMA in the region, she has taken advantage of her personal invitations to meet about 50 best students (girls and boys) from junior and high schools of all over the country who were on educational tour program, to promote mathematics and also introduce AWMA. She hopes that this will continue to be done by many of her colleagues when the association is formally established.

They also had small meetings and briefings on the establishment of AWMA and its visions and missions with lady teachers who come to the university to attend summer professional development programs. That is how some have been registered as members. They hope that the upcoming conference at Naivasha will allow them to come together and do some solid plan on how to move forward in the region, including the search for new members

IV. Report on the Activities of North Africa, Dr Schehrazad Selmane AWMA Vice President

A Tunisian Mathematician Women Association (TMWA) was created in 2015. The **Tunisian Mathematician Women Association** is intended for Tunisian women having PhD in Mathematics.

Purposes of the Association are to:

a) Promote science and mathematics research in Tunisia.

b) Promote and enhance Tunisian women in scientific and mathematic communities.

c) Establish a global network of contacts with mathematician women of different countries to engage Tunisia in scientific projects in the field of fundamental and applied mathematics (finance, statistics, biology, industry, computer sciences)

d) Make Mathematics a science opening vector and scientific influence of Tunisia to the rest of the world.

e) Organise national and international conferences and congresses in Tunisia. The address of the Association: **Residence Al Wouroud, Apt B34, Street Taoufik Al Hakim 2058, Riadh Al Andalus, Ariana, Tunis, Tunisia**.

The office bearers are as follows:

Steering Committee (consisting of 5 Members):

President: Saima Khenissy, Lecturer (saima.khenissy@gmail.com)

General Secretary: Sana Mahfoud, Assistant Professor (s_besbes@yahoo.com)

Treasurer: Mouna Ghedamsi, Assistant Professor (mouna.ghedamsi@gmail.com)

Members:
Anissa Rabhi, Assistant Professor (rabhianissa@gmail.com)
Rim Amami, Assistant Professor (amamirim@gmail.com)

V. Report on the Activities of Southern Africa, Prof Sibusiso Moyo AWMA Vice President

In 2013/2014, Prof. Moyo was involved in a number of activities related to AWMA. She was involved in the organisation for Women in Science SA chapter as Vice-Chairperson. She also

particped in the Gender Summit hosted by the HSRC (Human Sciences Research Council) in Cape Town in 2015, under the AWMA banner. She talked about "baseline inputs and outputs to increase participation in higher education in Africa".

The Vice President, Prof Moyo proposed the following actions for 2015/2016

     i. Regional/Planned Activities under the AWMA umbrella;

    ii. Budgets for each of the planned activities and regions where these are to take place

   iii. Regional representatives responsible for each of the activities.

   iv. Plan a Mathematics regional workshop under AWMA for 2015/2016 in South Africa (Durban) – will apply for funding through the NRF and DST if approved the Exec. AWMA.

In 2013/2014 She was involved in a number of activities (Organisation for Women in Science SA Chapter as Vice-Chairperson, as AWMA member she also participated in the Gender Summit hosted by the HSRC (Human Sciences Research Council) in Cape Town in 2015. Here under the AWMA banner. She talked about "baseline inputs and outputs to increase participation in higher education in Africa".

VI. <u>Report on the Activities of Central Africa, Prof Rebecca Walo AWMA vice President</u>

The Central Africa region contains 5 countries which do not have many activities together. Prof Walo tried many times to get information from colleagues of Afrique Centrale, Gabon, or Cameroun but never got an answer. She will organize to visit these countries in the future.

From Congo Brazzaville there is a little association of student and the only woman Professor of mathematics at Marien Ngouabi University. Unfortunately, the association had no activities.

In D.R.Congo, they created the Association of Congolese women in Mathematics and Computer Science (AFCMC) last year, in December 2014. This association is a part of the one of Congolese women in Sciences (created in 1995) and has the same aims. The AFCMC has 45 members all of them has at least a Master of Sciences degree. More than 20 are working in Banks where some hold top positions. Some of them are managers of societies and others are teachers at High school or University.

The general aim of the AFCMC is to promote the leadership of women in mathematics and computer sciences in every sectors of the D.R. Congo life.

One of their project next year is to sponsor the studies of promising young Congolese girls in mathematics and computer science.

VII. Treasurer's report : Dr Fagueye Ndiaye (Senegal)

VII.1 Report of subscriptions.

N°	Family Name	Given Name	Country	E-mail address	Institution and Mailing Address	Amount
1	Gbeha	Micheline	Benin	michgbeha@yahoo.fr	Département de Math Université de Cotonou	$40 US
2	Walo	Omana Rebecca	RD Congo	rwalo@yahoo.com,undt.rectorat@gmail.com	Université de Kinshasa	$40 US
3	Mayar	Ratera Safiel	Tanzania	rsafielmayar@gmail.com	Institute of Education (Tanzania)	$40 US
4	Roy	Marie Françoise	France	marie-francoise.roy@ univ-rennes1.fr	Université Rennes 1 France	$40 US
5	Ndiaye	Fagueye SYLLA	Senegal	fagueye.ndiaye@ucad.edu.sn	UCAD	$40 US

The treasurer hopes that AWMA general meeting in Kenya makes possible the subscriptions of a significant number of AWMA officers and members.

VII.2 Steps taken to open an account in the name of AWMA

Information taken from Senegalese and Panafrican banks for a possible opening account for our association.

Until now, AWMA has no bank account.

VII.3 "Girls and Science: a crystal-clear equation"

She organized a one day-meeting on 7 March 2015 at Université Cheikh Anta Diop of Dakar-Senegal by: Sophie Dabo from Diaspora section of the Association "Femmes et Mathematiques" of France, Khoudia Gueye Sy from SENCHIX (Association of Women in Informatics of Senegal) and herself from AWMA.

VIII. Report by AWMA Secretary : Prof S.D. Hove-Musekwa, Zimbabwe

Prof Hove-Musekwa was involved in the following activities.

VIII.1 Mathematics workshops in Zimbabwe

She organised a number of Mathematics workshops in Zimbabwe for Girl Child with Female Maths teachers. This was done during the National University of Science and Technology School Enrichment Program (NUSTSEP) which is running in four provinces of Zimbabwe.

VIII.2 Matabeleland Mathematics Teachers Association

With other mathematics teachers they formed Matabeleland Mathematics Teachers Association with three quarters of membership being women.

She held workshops of activity-based methods for teachers and for lecturers training Mathematics teachers

VIII.3 Sensibilation on AWMA

As NUST we hosted SAMSA Conference 2014 at Victoria Falls in Zimbabwe and she sensitized delegates on the activities of AWMA

VIII.4 NUST Academic Women's Association (NUSTAWA)

Together with academic women at NUST we formed NUST Academic Women's Association (NUSTAWA). **NUSTAWA is** an association for women in the academic field at NUST. NUST, as an academic institution that has few women who are PhD holders or are working towards attaining their PhD's or even publishing in local and internationally recognized journals. There are also few women in different roles of leadership in the institution. NUSTAWA aims at bringing together women to motivate them towards attaining higher qualifications and getting them to participate in the uplifting of the institution through leadership at various levels. Only one lady is a Professor of Mathematics in Zimbabwe NUSTAWA's vision is to have an institution where academic women are leading lecturers, researchers, innovators and entrepreneurs for sustainable development. In short the aim of NUSTAWA is to build women academics into scholars and leaders in Maths and Science. Its main activities are organization of writing retreats, organization and running of workshops, review of research papers, review papers in preparation for publication, preparing women applicants for academic promotions and providing career guidance for the girl child. All the Mathematics female lecturers and teachers are keen to join AWMA.

IX. Report by Communication Officer: Ms Milaine Seuneu Tchamga

IX.1 Creation of a logo.

Ms Tchamga is glad to report that progress has so far been made and major developments in the creation of the logo. The logo has so far been designed and completed after numerous comments and adjustments from you the members. Well done for this achievement.

IX.2 The Google group.

It is worthy noting that interactions are an important and fantastic innovation in todays' world. So far, we have scored success in this area and have managed to garner 44 members. The door is still open and would wish that as many people as possible join in to make our membership on this site. We realise that in mathematics no one can have all the skills alone. Therefore, team work and collaboration are an important epitome for this organisation, and it ought to be the future of mathematics (https://groups.google.com/forum/?hl=en-GB#!forum/awmassoc).

IX.3 Making the AWMA known.

Attracting young women and making the organisation known is a realistic aspiration for our organisation. We live in a world of social, social media and networks where you have to be liked, poked or shared. She feels the creation of a facebook page is a step in a right direction to raise an awareness for this organisation. We have an active page and the profile has been raised already where we have so far 223 people who have visited the page at least once. She has also witnessed 51 followers. She knows that we are competing with so many other activities, but with time and dedication from all of us, this will likely grow. She projects a vibrant and competitive organisation in the near future. (https://www.facebook.com/pages/African-Women-in-Mathematics-Association/942551245769536)

IX.4 Promoting AWMA

She has promoted AWMA among friends, in her departments and university. A lot has been achieved already to this effect merely informally.

X.   Recommendations and Way forward AWMA

From interactions it is vital for AWMA to develop a set of activities. These activities must come from each region for the Executive team to approve. Then each region needs to have a budget or AWMA Executive must guide the VPs (or Vice-Presidents) where to raise funds or opportunities for joint grant applications. Certainly working with the group on GenderInSITE one can learnt that it is important to bring an activity plan together and allocate resources. As it is we each do our own activities and need to coordinate these better.

POINTS OF DISCUSSION/CLARIFICATION:

a. Please can we at the meeting clarify which countries form a Region and then representatives of those countries so that whoever is VP has an idea of the Region plus Regional contacts.

b. All the activities which some members were involved in were either sponsored through, for example, OWSD SA Chapter, ASSAf (the Academy of Science of South Africa) and University funding even though I did include my AWMA affiliation in all the engagements as they focus on mentoring and supporting girls in Science, Innovation, Technology and Engineering of which Mathematics is included.

c. For forward planning there is a suggestion that at the AWMA meeting we ask each region to identify activities for the periods 2015/2016 and suggest a budget. Regional activities need to include countries and country representatives of those regions. Also a budget needs to be allocated - whether the funds are to be applied for or awarded through AWMA.

d. Whilst our mode of operating is email it is important to also set up face-to-face meetings even if once a year through skype or WEBEX so that we do not get lost in the email trails and can catch up on regional activities.

XI. The Obituary of Prof Paulus Gerdes by AWMA Secretary, Prof S.D.Hove-Musekwa

I believe some of us received the sad news of the sudden death of Prof. Paulus Gerdes in Mozambique on Monday 10th Nov. 2014 with grieve and deep shock. Prof Paulus Gerdes was a Full Professor of Mathematics, Vice-President for Southern Africa, African Academy of Sciences; Former Chairman, African Mathematical Union Commission for the History of Mathematics in Africa (1986-2013); President, International Study group for Ethnomathematics; Former Rector / President, Pedagogical University, Mozambique (1989-1996); Senior Advisor for Research and Quality, ISTEG-University, Boane, Mozambique. He was a book writer and his books published or distributed by Lulu are found on: http://www.lulu.com/spotlight/pgerdes

Prof. Gerdes was a pioneer in the fields of Ethnomathematics and of Historiography of Mathematics in African cultures. He is well known internationally for his path-breaking contributions in these fields. Prof. Gerdes was one of the founding members of Southern Africa Mathematical Sciences Association (SAMSA) who was always a plenary/guest speaker at SAMSA conferences.Some of us already know him since he was one of our invited speakers who spoke at our Inaugural meeting for the launch of the African Women in Mathematics Association (AWMA) at AIMS, Cape Town, South Africa in 2013, where he gave a lecture on the theme **"Mathematical ideas, creativity and invention in African female cultural practices: Case studies of Makwe and Tonga mat- and basket weavers in Mozambique"** which was highly appreciated. His contribution to Mathematics Educations, taking both local and traditional contexts into account is significant and the History in particular of `African Mathematics' is significant. Prof Paulus Gerdes had already accepted to be one of our speakers on **Lecturers on Women Situation In Africa** at our next AMUCWMA / AWMA 2015 workshop in Mombasa, Kenya in 2015. He was going to give a lecture on **Contributions of African Women to Mathematics.** He was very keen to let everyone know about his work as shown by his communications.

Note: The Report on African Women with a doctorate in Mathematics prepared by AMUCHMA (African Mathematical Union Commission for the History of Mathematics in Africa) under Prof. Gerdes leadership can be found on AWMA's website http://africanwomeninmath.org/women-in-math/report/african-women-doctorate-in-mathematics.

XII.   Acknowledgements

On behalf of the standing committee, Prof. Marie Françoise Ouedraogo, AWMA President would like to thank all those lady mathematicians and their collaborators who have encouraged us to come together and form our AWMA, and have continued to support us till now. In particular she would like to thank Prof. Marie Françoise Roy, chair of the International Mathematical Union Committee for Women in Mathematics. She played a very important role in the establishment of AWMA and has done a lot of promotion work. As a result of her effort and that of many other individuals and organizations, we have earned support from CIMPA, European Women in Mathematics (EWM), IMU CDC and IMU CWM and the like, without which we wouldn't have succeeded in establishing succesfully AWMA, at least this fast. AWMA officers have been inviting members to various countries to introduce AWMA to sister associations there. This has helped in experience sharing with the European Women in Mathematics, and other sister associations invited from various parts of the world (India, Korea, Europe, America, etc,).