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The Organization for Women in Science for the Developing World (OWSDW), formerly known as the Third World Organization for Women in Science (TWOWS), is a non-profit, international non-governmental organization. Its headquarters are located at the seat of TWAS, the Academy of Sciences for the Developing World, in Trieste, Italy. The organization was founded in 1989 as a result of the recommendation of the conference, “Role of Women in the Development of Science and Technology in the Third World,” held in Trieste in October 1988 and sponsored by TWAS and the Canadian International Development Agency (CIDA). Conference participants debated the rationale of establishing an organization for women outside mainstream international scientific bodies such as TWAS and the International Council for Science (ICSU). A consensus was reached that TWOWS (as it was then known) could play a vital role in increasing women’s access to science and technology and in promoting greater participation of women scientists and technologists in the process of development of their countries and the international community.

As Lydia Makhubu, founding President of TWOWS, has said, “We have to consider afresh the role of women in the scientific enterprise, to think it out again from the beginning. We must secure for women an entirely new value and significance and we cannot do that unless women

* The views expressed in this paper are those of the author and do not necessarily represent those of the United Nations.

are allowed to have a say in determining what that value should be....An equitable partnership of men and women scientists can surely achieve this goal.¹

Currently, more than 4,000 women from some 90 developing countries (113 countries in total) are OWSDW members.

Recently OWSDW held its Fourth General Assembly (GA) and International Conference in Beijing, China, hosted by the Chinese Academy of Sciences on June 27-30, 2010. Six hundred participants attended from 55 countries to present papers and hold discussions on the scientific contributions of women in four areas: Women Scientists and Frontiers of Sciences; Women Scientists and Global Change; Women, Innovation and Entrepreneurship, Leadership Capacity; and Gender Mainstreaming in the Global Scientific Community. A Young Women Scientists' Forum was also featured as part of the Conference. The Conference was opened by Xi Jinping, Vice President of the People's Republic of China, and leading scientists and dignitaries from around the world including Naledi Pandor, Minister of Science and Technology, South Africa; Sharon Hrynkow, Senior Advisor to the Assistant Secretary, Bureau of Oceans, Environment and Science, US State Department; Yongxiang Lu, President of the Chinese Academy of Sciences; and Mohamed Hassan, Executive Director of TWAS and co Chair of the Global Network of Academies of Science (IAP).

The GA marked an important moment in OWSDW development, as it revised its statutes, membership and objectives to support its emergence as a leading international organization of its kind. The changes will allow the organization to better meet current global challenges in a knowledge-based and globalized world. Knowledge, technology and innovation are the most important resources and driving forces for sustainable development of economy and society. Gaps between the South and the North in economic development, information, knowledge, and innovation capacity are in this context leading to further imbalances between the rich and the poor globally as well as within countries. Gaps in opportunities to benefit from and participate in the global economy continue to exist between women and men, while great development challenges remain in eradicating poverty and improving standards of living worldwide. Humankind now, more than at any other time in history, needs science and technology and the mobilisation of all scientists to play their part: women need science and science needs women.

OWSDW works on the assumption that only through exchanges and cooperation between countries, and the discovery and sharing of knowledge can we realize the achievement of the Millennium Development Goals and build a better world of fair, peaceful, and sustainable development. OWSDW also believes that countries in North and South must work together in a respectful and equal relationship if these challenges are to be resolved, and that in fact this is mandatory if countries are to succeed and prosper in the global knowledge economy.

At this Assembly the name of the organization was changed to Organization for Women in Science for the Developing World (OWSDW), to better reflect its focus on promoting both the greater participation of women in science, technology and innovation as well as the use of science, technology and innovation to better the lives of both women and men in the developing

¹ Makhubu, L. 1999. Women in science, Third World perspectives. Nature Debates 16 September. <http://www.nature.com/nature/debates/women/>.

world. A revised set of statutes was presented and approved by the General Assembly.

A new President was elected for 2010-2014: Prof. Fang Xin is a research professor and member of the Presidium of the Chinese Academy of Sciences (CAS). Supporting her on the Board are:

- Africa: Dolly Ahbor Ighoroje, Associate Professor, University of Benin, Nigeria, Vice President; Esi Awuah, Professor, Kwame Nkrumah University of Science and Technology, Ghana, Member
- Arab States: Samira Omar, Division Director and Professor, Food Resources & Marine Sciences Division, Kuwait Institute for Scientific Research, Kuwait, Vice President; Rokhsana Abdul Rahman, Associate Professor, Aden University, Yemen, Member
- Asia And The Pacific: Farida Habib Shah, Adjunct Professor, Molecular Biology, University Tunku Abdul Rahman, Malaysia, Vice President; Sudha Nair Director, M.S.Swaminathan Research Foundation, India, Member
- Latin America and the Caribbean: Mayra de la Torre, Professor, Centro de Investigacion en Alimentacion y Desarrollo, A.C Mexico, Vice President; Miriam Diaz, Professor emeritus, Universidad Nacional Experimental Francisco de Miranda (UNEFM), Venezuela, Member
- Past President: Kaiser Jamil, Research Scientist and Head of Department, Genetics Department, Bhagwan Mahavir Medical Research Centre, Hyderabad

The **Beijing Statement** was approved by the Conference and released on 29 June 2010. In view of the commitments in the Platform for Action of the 1995 Fourth United Nations World Conference on Women, and the recommendations in Para 90 of the Framework for Action of the World Conference on Science held in Budapest in 1999, the participants called on governments and the international community to recognize, document and highlight the contributions made by women to science, technology, engineering and innovation and to take steps in policy and programming to ensure the full participation of women and girls in all aspects of science and technology. (See Appendix 1)².

In this context, OWSDW has the following objectives. In its work, it seeks to :

- 1) Increase the participation of women in developing countries in scientific and technological research, teaching and leadership;
- 2) Promote the recognition of the scientific and technological achievements of women scientists and technologists in developing countries;
- 3) Promote collaboration and communication among women scientists and technologists in developing countries and with the international scientific community as a whole;
- 4) Increase access of women in developing countries to the socio-economic benefits of science and technology;
- 5) Promote participation of women scientists and technologists in the development of their country; and
- 6) Increase understanding of the role of science and technology in supporting women's development activities.

² See www.twows.org for more information on OWSDW and the General Assembly.

To support these goals, OWSDW has also opened up its structure to promote collaboration between women and men scientists in North and South. Women scientists from developed countries are now eligible for full membership in the organization, as are social scientists working in areas relevant to STI for development³. As well, developed countries are now invited to establish OWSDW National Chapters. OWSDW is in discussion with the American Association for the Advancement of Sciences (AAAS) and the US State Department on establishing a “Diaspora” OWSDW committee which would bring together women scientists from the developing world working in the US and Canada in support of OWSDW objectives.

The proposed North America Chapter will work with the network of OWSDW chapters around the world. Chapters have been established in 11 countries, with more in development, which work in their region and countries with other women’s networks and national and regional science organizations. For example, the Malaysia chapter organized a Young Scientists’ Symposium in collaboration with the TWAS regional office for Asia, while the China National Chapter, hosted by the Chinese Academy of Sciences and the TWAS Office for East Asia organized and hosted the Fourth Annual General Assembly.

The OWSDW Executive Board works with the national chapters and the OWSDW Secretariat to implement regional activities and the OWSDW Strategic Plan. Under this Plan, OWSDW implements programmes in major areas identified through its objectives:

1) Increasing the participation of women in developing countries in scientific and technological research, teaching and leadership.

- **The OWSDW Postgraduate Training Fellowships programme.** With the support of the Swedish International Development Agency (Sida), OWSDW provides fellowships that allow young women scientists from Sub-Saharan Africa and Least Developed Countries (LDCs) to obtain postgraduate training in centres of excellence in the South. To date, 150 fellowships have been taken up. Of these, 75 young women researchers have graduated from their PhD programmes. Over \$3 million has been provided by Sida for the programme during the period 2005-2010.
- **Gender and Science Education.** OWSDW has worked with science academies in Africa and Latin America to address how science education can be made more attractive to girls and encourage their success. To date, a workshop was held in Pretoria, South Africa, in collaboration with the Academy of Sciences of South Africa (ASSAf) on Gender and Inquiry-Based Science Education. In June 2010, OWSDW worked with the InterAmerican Network of Academies of Sciences (IANAS) to identify speakers on gender and science education for the VII Meeting of the IANAS Science Education Program, as well as inputs on gender to a capacity building workshop for science teachers.

2) Promote the recognition of the scientific and technological achievements of women scientists and technologists in developing countries:

³ To ensure that the organization continues to be led by women natural scientists from developing countries, the maximum percentage of members in these new categories is 20%.

- With funding from the Elsevier Foundation and TWAS, **OWSDW Awards for Young Women Scientists** were awarded to 12 women scientists from Africa, the Middle East, Asia, Latin America and the Caribbean for their research excellence. Awards were given for three disciplines in each region – biology, chemistry and physics/mathematics. The 2010 prizes were announced on 27 June at the OWSDW 4th General Assembly in Beijing and awarded by Xi Jinping, Vice President of the People's Republic of China, and David Ruth, Executive Director of the Elsevier Foundation. A followup 2010 grant by the Elsevier Foundation will continue support for the Awards in 2011.
- **GenderInSITE.** In January 2010, OWSDW organized a workshop in collaboration with TWAS, the Gender Advisory Board – United Nations Commission on Science and Technology for Development, and UNESCO, with funding from the Swedish International Development Agency (Sida). Approximately 30 participants attended, including the Directors of three Divisions at UNESCO: Basic and Engineering Sciences; Science Policy; and Gender Equality. Participants met to explore the possibilities of collaborating around a global, multi-sectoral, multi-stakeholder initiative to promote not only the role of women IN science, technology and innovation, but also how science, technology and innovation can be FOR women, that is, how it can serve women's lives and livelihoods at the grassroots level.

The workshop was convened as a result of the experience of the sponsoring organizations that in many cases insufficient action has been taken because the key stakeholders – policymakers, agency decision makers, NGO groups and others - are unaware of the gender dimensions of science, technology and innovation (STI) for development. The concept comes out of the work of the Gender Advisory Board in 1993-1995 and the 1999 UNESCO World Science Conference. As well, the Millennium Development Goals in 2000 (MDGs) include gender equality and empowerment of women as Goal number 3. It is also designated as a cross-cutting issue, reflecting acknowledgement among signatory countries that the MDGs cannot be achieved without the integration of women and gender dimensions into every aspect of development.

The results of the workshop include an agreement to develop a GenderInSITE campaign with the purpose of working with a range of decision makers and stakeholders at national, regional and international levels on four main topics :

1. Education and research, focusing on education and training of women and girls at all levels of the STI system.
2. Employment / Workforce and Leaky Pipeline issues, particularly the loss of women in the transition from the educational system to the STI workforce.
3. Innovation systems, SMEs and technology transfer, with a focus on the role and situation of women in informal and grassroots innovation systems in both rural and urban settings.
4. Gender and STI dimensions of global climate change. Focusing on women's role in the STI system, and development of technologies to support recovery, mitigation and adaptation efforts.

The campaign is intended to mobilise stakeholders at all levels to:

- support understanding of the gender dimensions of science and innovation for development in the areas of emphasis of Para 90;
- highlight women's role in development and how it can be supported using science and technology;
- recognize and highlight women's role and contribution to national science and innovation systems; and
- develop and disseminate strategies and models for action.

The next steps are to undertake a series of regional surveys of decision makers and stakeholders on perceptions of the importance of gender and STI issues in their region and a campaign launch meeting in early 2011, potentially hosted by the Department of S&T of South Africa.

3) **Promote collaboration and communication among women scientists and technologists in developing countries and with the international scientific community as a whole**

- **TWAS-OWSDW Advisory Panel.** The Advisory Panel acts as a liaison between OWSDW and TWAS, developing recommendations for TWAS on actions to take to encourage the increased participation of women in its membership, committees, grants and other activities.
- **IAP Women for Science** – OWSDW is collaborating with the Network of African Science Academies (NASAC) and the InterAmerican Network of Academies of Science (IANAS) to promote followup activities to the Women for Science report of the InterAcademy Council released in 2005⁴. The report noted that science and technology capacity building requires the full engagement of women in S&T from the top decision-making levels all the way down to the grassroots, and that science and engineering academies urgently need to take action: A greater range of styles and points of view - made possible by a diversity of scientists and engineers - will enrich the S&T enterprise as well as the societies it serves. OWSDW has been working with these networks on activities in four key areas outlined in the Women for Science report, in which, if concerted actions are taken, the greater participation of women in science and engineering can be encouraged:
 1. Education in S&T for girls and women
 2. Increasing visibility of women scientists and engineers
 3. Building an inclusive institutional culture
 4. Fostering networking and mentoring to resolve the isolation of women in science.
 In November 2009, the NASAC-TWOWS Workshop on Women for Science developed a Plan of Action for the region and agreed to establish a regional Women for Science working group. The IANAS Women for Science Working Group in the Americas was

⁴ <http://www.interacademies.net>

launched June 2010⁵. OWSDW is a member of the Working Group, which is developing a 5 year Plan of Action for activities with academies in the region.

- **The Elsevier Foundation** is collaborating with OWSDW for the period 2010- 2011, committing its entire New Scholars Fund budget for 2011 to OWSDW for the Young Women Scientists' Awards and a joint OWSDW-TWOWS project on developing national benchmarking of gender and STI in Brazil, China, India, Indonesia, and South Africa.
- Through its website and listservs, OWSDW communicates with its members and affiliated networks. It is also supporting the development and management of the IANAS Women for Science website.

4) Increase access of women in developing countries to the socio-economic benefits of science and technology and 6) Increase understanding of the role of science and technology in supporting women's development activities.

OWSDW takes seriously the importance of promoting the role that science, technology and innovation can play in supporting women's poverty eradication, livelihood and other development activities. Science and technology should benefit all members of society, and pose great potential to address some of the major development issues experienced in many countries. Through the GenderInSITE initiative and collaborations with other organizations, it is working to raise awareness of the role of science for women and to generate collaborative activities in this area. For example, the GenderInSITE activity on Gender, STI and climate change will highlight the role that S&T can play in supporting women's activities in living with, ameliorating or addressing the affects of climate change – such as changing agricultural practices, survival activities undertaken as a result of disasters and crises, energy, water and sanitation, etc. The focus will be on the role of women scientists in the science of climate change; behavioural dimensions and STI support to women's adaptation, recovery and crisis management activities at the grassroots level.

5) Promote participation of women scientists and technologists in the development of their country

OWSDW National Chapters provide a forum for women scientists and technologists to network, present their work and interact with different stakeholders in their countries. The purpose of national chapters is to promote networking, leadership, professional development and collective action among women scientists, increase the profile of women scientists, and work with a range of decision makers and stakeholders to achieve OWSDW objectives. For example, the South Africa National Chapter, hosted by ASSAf, the Academy of Sciences for South Africa, has defined its objectives as:

⁵ See http://www.ianas.org/wfswg/women_en.asp

- Promoting the participation of women and science in S&T in South Africa and the SADC region
- Promoting scientific and technological development of South Africa and the SADC region
- Facilitating access to educational and training opportunities for women in S&T in South Africa and the SADC region
- Popularising and promoting S&T for the general welfare of South Africa and the SADC region
- Creating linkages between science and society in South Africa and the SADC region.

Its activities include development of a website linked to the ASSAf and OWSDW websites, disseminating information to research offices at South African academic institutions, encouraging recipients of women in science awards to join OWSDW, promoting OWSDW fellowships, encouraging senior OWSDW members to mentor young women scientists, organising capacity building workshops and seminars, including encouraging young women scientists to attend the ASSAf annual young scientists conference, establishing linkages with women scientists organisations in the country, and encouraging collaboration between OWSDW South African members and women scientists in the SADC region. The chapter also works with the Department of Science and Technology in the country on various initiatives promoting women in science and technology in the country and is part of the DST-hosted SADC Women in Science Platform. The Chapter was officially launched by the Minister of S&T in October 2009 at the TWAS General Conference in Durban.

National chapters have also been established in Bangladesh, Bolivia, China, Cuba, India, Malaysia, Mexico, Nigeria, and Yemen, with focal points and emerging chapters in many more countries.

Through these national level initiatives as well as collaboration with like-minded and supportive organizations at the regional and international levels, OWSDW will continue to support and encourage women scientists to build their capacity, share their knowledge and technology, and work to reduce and even eliminate the divide between developed and developing countries.⁶

⁶ Fang Xin, Presidential Address to the TWOWS Assembly, June 2010, Beijing, China.

Appendix 1

Beijing Statement

As we close the 4th General Assembly and International Conference of the Organization for Women in Science for the Developing World (OWSDW), gathered here at the Beijing International Conference Centre, China, we hereby affirm that it is strategically important for all countries to promote the participation of women in national scientific, technological and innovation systems. Only with the full participation of women will we be able to create more integrated, sustainable, economically advanced and equitable societies.

Considering:

The statement of the Beijing Platform for Action of the 1995 Fourth United Nations World Conference on Women, that countries should recognize and encourage the contribution of research by women scientists and technologists and provide access to technology transfer to women's business enterprises;

And

Para 90 of the Framework for Action of the World Conference on Science held in Budapest in 1999, that governments, educational institutions, scientific communities, non-governmental organizations and civil society, with support from bilateral and international agencies, should take steps to ensure the full participation of women and girls in all aspects of science and technology;

Acknowledging:

That progress towards gender equality in science, engineering and technology (S&T) is occurring in many countries;

Realizing:

That much remains to be done before women can contribute equally with men in science, engineering and technology and before girls have full access to education in science and technology;

Hereby conclude that governments and the international community should:

- Work to support and encourage the full participation of women and girls education, careers and work in science, engineering, technology and innovation; and
- Recognize the role that science, engineering, technology and innovation can play in supporting women's development activities;

And propose the following course of actions for governments and the international community:

- Document, highlight and collect data on the scientific and technological contributions and knowledge of women;
- Improve conditions for recruitment, retention and advancement of women in all fields of research;
- Work towards equitable representation of women in national, regional and international policy- and decision-making bodies and forums; and
- Recognize and help women implement and improve their local scientific knowledge.

We furthermore acknowledge our need for personal and collective networking and action at local, national chapter, regional and international levels and pledge our best efforts to work with those committed to implementing the goals outlined here.

29 June 2010