OWSD Annual Report 2022

ORGANIZATION FOR WOMEN IN SCIENCE FOR THE DEVELOPING WORLD











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ORGANIZATION FOR WOMEN IN SCIENCE FOR THE DEVELOPING WORLD (OWSD) Annual Report 2022

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ABOUT OWSD

The **mission** of the Organization for Women in Science for the Developing World (OWSD) is to promote and strengthen the role of women scientists from the Global South in science and technology. We aspire to achieve this by empowering women through mentorship, training, and networking opportunities, supporting their research and leadership throughout their careers, and advocating for gender equality in science and technology. We envision a future where women scientists and technologists are agents of change in their communities, driving progress towards the achievement of the United Nations Sustainable Development Goals.

SUSTAINABLE GOALS



Women. Science. Development. 1987 1997 2003 Abdus Salam, founder of The OWSD receives financial support from First TWOWS National Chapter World Academy of Sciences the Swedish International Development is established in Yemen. Cooperation Agency (Sida), to support a (TWAS), recognizes the need 2012-16 2021 to support women scientists South-to-South PhD fellowships programme Sida increases funding to hire a Coordinator and Sida and IDRC sign a new 5-year in the developing world during specially for women from Least Developed 2005 more staff to be based at the OWSD Secretariat agreement to continue jointly funding the 2nd TWAS General Meeting Countries and Sub-Saharan Africa in STEM **3rd TWOWS General Assembly** in Trieste. The number of PhD fellowships OWSD's programmes, including National in Beijing. subjects. It is the only programme of its kind. and International Conference is increased, including funds to attend Chapter support and institutional in Bangalore, India. international conferences. engagement 1989 The OWSD annual awards (funded by the Elsevier 6th OWSD General Assembly and The Third World Organization Conference held entirely online, hosted Foundation) are re-launched and a special awards for Women in Science (TWOWS) ceremony takes place at the annual AAAS meeting by OWSD Secretariat, Trieste, Italy. is established and a constitution SWEDISH INTERNATIONAL DEVELOPMENT COOPERATION AGENC adopted. 1999 1988 2nd TWOWS General Assembly 218 women scientists from + 2022 and Conference in Cape Town. 63 developing countries attend 1993 South Africa The Aspen Institute Italia a conference on 'The Role of 2010 Women in the Development of TWOWS is officially launched joins OWSD's role of donors, At the 4th General Assembly Science and Technology in the at the First General Assembly supporting the Early Career Canada and Conference in Beijing, Third World' organized by TWAS fellowships programme. in Cairo, Egypt China, members vote to adopt in Trieste, Italy. a new name - the Organization The first executive board 2017 for Women in Science for the the 50th OWSD National A working group is set up is elected. Developing World (OWSD). to explore the creation of The Canadian International Chapter an organization that would **Development Research Centre (IDRC)** champion the experience, needs joins forces with Sida to sign a new and skills of women scientists project agreement, including the Early in the developing world. Careers Fellowship programme.



OWSD members and fellows' research covers all of the 17 SDGs. The Organization's programmes and strategy are currently focused on SDG 4: Quality Education, 5: Gender Equality, 9: Industry, Innovation and Infrastructure, 10: Reduced Inequalities and 17: Partnership for the Goals. In addition in 2022, OWSD awards are focused on SDG 13: Climate Action.



Dominican Republic becomes

The impact of OWSD

On the one hand, OWSD increases the number of women participating in scientific research and advocacy. Numbers are important - the more women there are in science, the better the science will be.

On the other hand, OWSD strives to be transformative in terms of gender and make an impact at the structural level. How is excellence in scientific research measured? The usual performance indicators depend on a limited notion of career success, which is gender-, culture-and geography-biased. OWSD wants to open up definitions of what is considered scientific excellence. When selection committees and

reviewers evaluate candidates (for grants or fellowships, for publication in prestigious journals, for invitations to speak at conferences or chair panels and meetings, or to be on editorial boards or to be awarded prizes), the criteria become, unavoidably, a self-fulfilling prophecy. Prizes beget prizes, and multiple publications (one of the key traditional indicators of scientific excellence) can contain the same pieces of information re-styled and re-framed multiple times.

At the same time, career breaks or diversions are seen as an obstacle to achieving excellence in science, as a distraction. Often the fact that women in many countries and cultures are the

primary caregivers, homemakers and educators, means that they make excuses for why their career trajectory is not the solid 'pipeline' of many of their male peers and why it has taken them so long to 'arrive'.

What if these diversions and excursions from the traditional path were seen instead as fundamental to scientific success and relevance? What if building relationships in the community, supporting and mentoring friends and relatives, being responsible for children's education, managing a household, being informed and making decisions about critical life events, and awareness of nutrition, were seen, not as

Undergraduates **PhDs**

THE ACADEMIC PIPELINE

The academic pipeline refers to the traditional career path that academics typically follow, from undergraduate studies to graduate school, postdoctoral positions, and eventually, faculty positions with tenure. The academic pipeline is leaky for women due to various systemic barriers and biases, including gender and racial biases, lack of mentorship, work-family conflicts, and other institutional and societal factors that disproportionately affect women and other underrepresented groups. These factors make it harder for women to advance in academic careers and can cause them to leave the traditional career path at higher rates than their male counterparts.



obstacles but as keys to opening up the relevance and impact of science - and most importantly, its uptake and implementation?



"Let's reject the notion that the 'pipeline' to scientific excellence is narrow and inflexible. We must embrace the diverse paths that women take, including those that involve caregiving and communitybuilding. Only by valuing the diverse experiences and perspectives of all individuals can we unlock the full potential of science and ensure that its benefits are felt by all."

> Tonya Blowers, **OWSD** Coordinator

OWSD MEMBERS' PATHS





Many successful OWSD members and fellows have taken meandering paths to be where they are today: they have stopped off to care for a sick parent, to give birth, raise and educate children, they have dedicated many unpaid hours in their full days to clean, cook and organize the family home. Many other OWSD members have not had these same responsibilities precisely because they have been able to undertake full-time PhDs far from home.

So rather than a blank space on a woman's CV being cause for suspicion and evidence of timewasting, those 'missing' 5 years dedicated to social responsibilities may instead be seen as evidence of a rounded individual immersed in her community, well informed

about the needs, challenges and solutions that may be needed to suit the diversity and experience of the individuals that science - and the SDGs - are supposed to serve.

The pipeline model is definitely rusty and needs replacing.

OWSD Structure

The structure of OWSD ripples out in concentric circles. The members are at the base of everything: members establish National Chapters and organize events and activities. They disseminate news of OWSD opportunities and their handson direct experience can reach girls and young women in the remotest rural areas of the poorest resourced countries. Alumnae from OWSD fellowships programmes join the National Chapters and explain how they became a PhD fellow, or an Early Career fellow or won an Award. Each chapter has an elected

national executive committee, and these are overseen at regional level by the 4 OWSD Vice Presidents who report back to the annual **executive board** meeting. The OWSD Secretariat sends out annual reports and gathers and analyses the data, and all this feeds back into the construction or adaption of OWSD programmes, ensuring their relevance and effectiveness. While the Organization's name is overarching and ambitious, covering 'women', 'science' and 'development', the active engagement of the National Chapters provides nuanced and specific data so that the



Secretariat is aware of the diversity of the cultural and geographical challenges facing women scientists from developing countries, and can attempt to provide solutions that can be adapted to the context. The National Chapter executive committees are a great way for members to gain experience in leadership and management. ExCom members have gone on to become elected members of the Global Young Academy or national young academies which can pave the way to election to national science academies. Each of these environments provides contacts, networks and opportunities to make a change at policymaking level.

Executive Board

Comprising the President, four Vice Presidents (one from each region), and four Regional Members. The OWSD Executive Board members act as regional focal points for the National Chapters. They represent OWSD in international, regional, and local frameworks, striving to enhance the visibility and representation of the organization. The executive board is elected by the members and since 2021 elections are held online.





President South Africa

ARAB REGION

ASIA

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CLICK OR SCAN TO KNOW MORE ABOUT OWSD EXECUTIVE BOARD MEMBERS

ABOUT OWSD

OWSD Vice President for Africa achieves remarkable milestones in 2022

2022 was an exceptional year for OWSD Vice President for Africa, Olubukola Oluranti Babalola, who this year additionally became Vice President of the TWAS Council. Her achievements not only contribute to the

advancement of science but also bring significant recognition to OWSD. Babalola was in the very first cohort of OWSD PhD fellows awarded in 1998. She has come a long way since then!



DESCRIPTION **OF PROGRAMMES**

OWSD offers programmes to support women scientists in developing countries throughout their careers in four key areas: community, mobility, capacity and visibility.

Community: membership in the international OWSD network and National Chapters ensures access to information on opportunities and skill-building activities as well as direct participation in national events.

Mobility: South to South PhD Fellowships allow women scientists from poorly resourced countries to travel to centres of excellence in developing countries to study STEM subjects.

Capacity: grants for Early Career stage women scientists support research-related expenses in scientists' home countries, with the aim of building international centres of research excellence located in STLCs.

Visibility: targeted awards recognise and celebrate the achievements of women scientists from developing countries. OWSD is also developing a storytelling programme (including



homemade videos, podcasts and narratives) that provides training and opportunities for women scientists from developing countries to showcase their achievements and contributions to their field, while also helping to break down stereotypes and biases and increase the visibility and representation of women in science.

Each of these programmes also comes with a wealth of training opportunities which OWSD is developing and providing with key partners in the South.

Through these programmes, women scientists attend conferences and seminars, develop skills, receive mentorship, and ultimately become leaders in their field while advocating for the inclusion of women's knowledge and needs in research projects.

2022 HIGHLIGHTS

OWSD's experience and expertise in providing opportunities for women in science from developing countries has been reflected in exceptional numbers across all programmes.

In 2022, OWSD is positioning itself more and more as an organization that makes an important impact with relatively few resources, mobilising women and communities around the world to actively participate in activities that change the perception of what women scientists can do - and where and how they can do it.

OWSD's activities in 2022 are marked by a strong emphasis on storytelling. The OWSD Visions films continue to be much appreciated: local film makers are trained online to work with **OWSD** National Chapters to create compelling short videos starring exceptional women scientists. The resulting videos were also screened at 2 OWSD film festivals (in Trieste and Cape Town). In addition, a video about OWSD Early Career Fellow Elizabeth Bandasson, from Malawi, was

made by the British Broadcasting Corporation (BBC) in collaboration with the International Science Council (ISC) and attracted the highest number of views in that series. OWSD also organized panel presentations for fellows, increasing their visibility at high-level events such as the Global Diaspora Summit (online), the World Science Forum in Cape Town, South Africa, and the EuroScience Open Forum (ESOF) in Leiden, Netherlands. Furthermore, a partnership was formalized with the Nairobi-based Training Centre in Communications (TCC) to ensure visibility throughout Africa of OWSD programmes and activities. Finally, foundations were laid for setting up an OWSD Italy National Chapter based in Trieste (to include visiting





"In 2022, OWSD is being recognized as a world leader in tailor-made programmes for women scientists from developing countries. OWSD members throughout the Global South are sharing their experiences and solutions to the unique challenges they face in STEM careers. I look forward already to next year's report to see how we've used this knowledge to strengthen partnerships, secure new donors, and celebrate 25 years of OWSD PhD Fellowships and 30 years since our official launch. Let's keep breaking barriers and empowering women in science!"

Jennifer Thomson, OWSD President





OWSD-Elsevier Foundation awardees more than half of the applications from Africa (31) of high quality



COMMUNITY: OWSD MEMBERSHIP & NATIONAL CHAPTERS

OWSD's membership is the foundation of the organization, providing a much-needed sense of community for women scientists in the developing world who are often isolated; they may frequently be the only woman in their department (especially in maths, physics or engineering) and sometimes they are the only woman researcher in the entire institute!

OWSD full members are women scientists living in developing countries who have a postgraduate degree in science subjects.

Affiliate members are at earlier stages in their careers, with undergraduate degrees only.

Friends of OWSD can be women and men from developed and developing countries with at least an undergraduate degree across





Affiliate Member

- Woman with a bachelor's degree in natural or social
- Living in developing countries
- Access to OWSD international network, mentoring and
- Membership of National





- a bachelor's degree
- Living in developing or developed countries
- Committed to promoting the objectives of OWSD
- Can be invited by National Chapters to participate in events

CLICK OR SCAN

TO BECOME A FRIEND





TO BECOME A MEMBER

Includes

Chapter

COMMUNITY: OWSD MEMBERSHIP & NATIONAL CHAPTERS







Members under 40





(Members and Friends in 145 countries)

all disciplines (including the natural sciences, social sciences, arts and humanities).

In addition to the sense of community, OWSD membership offers access to a wide range of opportunities, such as training, travel, research visits, and funding, which are announced through international and regional OWSD mailing lists.



CLICK OR SCAN TO KNOW MORE ABOUT MEMBERSHIP IN 2022

National Chapters

If members are the foundation of the organization, National Chapters serve as its backbone. Any developing country with more than 20 members is eligible to apply to the OWSD Secretariat and Executive Board for National Chapter status. By the end of 2022, OWSD achieved an impressive milestone with a 15% increase in National Chapters, totalling 51 countries across the South, with 7 new chapters added during the year. Chapters are headed by national executive committees elected by members. They organize regular meetings and events and provide resources and training

SINCE 2018

51 **Total National Chapters**

New National Chapters

5 **New National Chapters** from LAC (Venezuela, Nicaragua, Chile, the Dominican Republic and Paraguay)

Total number of national chapters in LAC is now 15

New National Chapters from Africa (the Rep. of Congo and Niger)



opportunities for local girls and women in STEM. In addition, the chapters are key disseminators for all OWSD programmes, informing members about the PhD, Early Career and Awards programmes, inviting Fellows to give first hand feedback and assisting with grant applications.

National Chapter activities are divided into three main strands: those beneficial for women scientists; outreach activities; and those beneficial for the local community. Throughout the year, chapters have mostly organized events that provide women scientists with valuable resources and connections, such as webinars and online science talks (on WhatsApp), National Chapter celebrations, trainings and workshops.

In May, OWSD launched a call for applications to National Chapters for proposed events in their countries that promote, support and make visible women's participation in science and technology in the developing world and 19 chapters were selected to organize science communication workshops (Colombia, Guatemala,

OWSD members are typically young, vibrant. active and committed and their enthusiasm is contagious!



Zimbabwe), prizes for young women scientists (Cameroon, Mauritius and Pakistan). outreach events (Benin, Bolivia, Botswana, Rep. of Congo,

agriculture and quality seed production for students, housewives and farmers (Jordan,

Outreach event organized by OWSD Myanmar farmers on quality seed production.



COMMUNITY: OWSD MEMBERSHIP & NATIONAL CHAPTERS

Mauritius, Myanmar and Sri Lanka)

women scientists (in Niger).

Some National Chapters organized activities aimed at influencing policymakers at local level, such as drafting a university gender policy (Ghana) or seeking collaborations and programme funding from the local Ministry of Education (Nigeria).

The OWSD Secretariat also supported the National Chapters of Bangladesh and Zimbabwe with the online elections of their new Executive Committees, using a software system which allows one vote per OWSD country member.



CLICK OR SCAN

TO KNOW MORE ABOUT NATIONAL CHAPTERS AND THEIR ACTIVITIES

OWSD NATIONAL **CHAPTERS**

Members of the OWSD Guatemala National Chapter in December 2022

Countries with National Chapters Countries without National Chapters Countries with National Chapters established in 2022

Some members of the OWSD Bolivia National Chapter at 'Woman in science rocks", a motivational and community building event organized by the National Chapter in December 2022

OWSD Mozambique members attend a 2-day workshop about the process of research proposal preparation and writing in order to have more women doing research in the country.

		2019
		Botswana
2009		Zambia
China	2018	Cameroon
Bangladesh	Indonesia	Tanzania
South Africa	Mauritius	Jordan
	Myanmar	Malaysia
2010	Zimbabwe	Namibia
Nigeria	Ghana	Pakistan
	Kenya	Peru
2017	Sri Lanka	Turkey
Sudan	Rwanda	Uruguay

2003

Yemen

2006

2008

Egypt

India

COMMUNITY: OWSD MEMBERSHIP & NATIONAL CHAPTERS



2020

Malawi Honduras Senegal Guatemala Mozambique Palestine Nepal Brazil

2021

Mexico Uganda El Salvador Benin Colombia Central Asia (Uzbekistan, Kyrgyzstan, Kazakhstan) Bolivia Morocco Ecuador

2022

Paraguay Dominican Republic Chile Nicaragua Venezuela Niger Congo

National Chapter activities

Outreach activities were highly popular (59), with 23 activities involving schools. Many chapters organized open days, competitions, quizzes, awards and scientific demonstrations. The 11 National Chapters of Bolivia, Botswana, Ghana, Honduras, Mauritius, Nigeria, Paraguay, Senegal, Sri Lanka, Tanzania and Zimbabwe focused their activities on girls and boys, not only to inspire the uptake of scientific subjects among children but to encourage (and model) inclusion through a participatory approach. Young people from 6 to 19 were involved in such activities.

Examples of **school outreach activities** were: an open day on microbiology for children (Paraguay); an energy transfer lab using local materials for primary schools (Tanzania); a food science and electrostatics lab for secondary schools (Tanzania); a career guidance day for junior high school pupils (Ghana); a school innovation competition with the award of "Best School Innovator" and the exhibition of inventions and innovations for teenagers (Sri Lanka); a science communication contest to encourage secondary school students to conduct research on famous female scientists (Mauritius); a workshop on liquid soap production (Nigeria); a science quiz competition between schools taking place in different country regions (Nigeria); as well as a STEM camp for senior high school girls (Ghana). Some of these projects have been replicated in different schools across the different countries (150 school outreach projects organized just by the OWSD Mauritius NC and 130 in Sri Lanka). Approximately 1,800 students have been reached in total: more than 1,000 across Africa and 580 across Latin America.

A wide variety of topics were discussed during 2022 **National Chapters activities** and events, including:

- knowledge sharing sessions on how to apply to research grants and OWSD opportunities
- mental health and stress management techniques
- developing female leadership in science
- from science to entrepreneurship
- scientific talks (i.e. on Maternal Health Care, Women at greater risk of Alzheimer's, the Impact of Tropical Diseases on Women and Girls)

Teaching and researching home gardening techniques was a popular

and highly impactful topic for 7 National Chapters (Benin, Jordan, Mauritius, Morocco, Myanmar, Sri Lanka and Zimbabwe): often conceived and presented by the chapters as a strategy towards empowerment and sustainability, but also to improve health care awareness through household nutrition. The activities were open to a broad section of the community, including high school students as well as rural or unskilled women, whose social,

"The enthusiasm and wealth of opportunities to empower women through home gardening techniques are indeed remarkable."

Lucia Fanicchi, OWSD Secretariat - responsible for National Chapters and outreach



economic and technical status was affected and often improved through their gardening skills. A variety of techniques were employed including: the production of functional food (Mauritius); quality seeds (Myanmar), or medicinal plants (Sri Lanka); urban home gardening (Sri Lanka) or sustainable agriculture (Benin and Morocco); addressing recent misinformation about modern plant improvement methods (Zimbabwe) and organic



fertilization and water management (Morocco); enhancing women's ability to enter into productive gardening and agricultural projects at the local level (Jordan).



CLICK OR SCAN

TO KNOW MORE ABOUT NATIONAL CHAPTERS ND THEIR ACTIVITIES

MOBILITY: OWSD PHD FELLOWSHIPS

This highly successful programme, in its 25th year of implementation, has awarded 576 fellowships to women scientists based in developing countries.

Of the women awarded, an impressive 368 had graduated by the end of 2022 and a total of only 52 had dropped out. This dropout rate (10%) compares well with the USA and Europe, which have dropout rates as high as 1 in 5 PhD students (male and female) before the pandemic. Over the last two years, this has increased further, with up to 45% disengaging from their research within 6 months. In addition to the low dropout rate, OWSD full-time fellows who

PhD Fellowship

ELIGIBILITY

- Women in STEM with a master's degree
- Citizens from 66 eligible countries
- Study outside of home country in any developing country in the Global South

INCLUDES

• Monthly stipend, travel grant, tuition fees

FUNDED BY

 Swedish International **Development Cooperation** Agency (SIDA)

graduated in 2022 took only 4.3 years to complete, a remarkable achievement considering the poorly resourced countries they come from. Since this is a 'South-to-South' programme, host institutes are based in other developing countries. In 2022 host countries were Argentina, Benin, Brazil, Botswana, Egypt, Ghana, Kenya, Malaysia and South Africa. The success of OWSD fellows is also due in large part to the quality of support provided by these institutes, carefully approved by reviewers at the time of selection and with many of whom OWSD has longterm agreements and has built a solid working relationship (the Universiti Putri Malaysia, and the Universities of Pretoria and Cape Town in South Africa, for example). Host institutes in turn appreciate the commitment and excellence of the students that OWSD recommends and the fact that they come, by definition, from under-represented countries (especially in Africa) enriching the institute's diversity and potential

Feedback from students completing their studies suggests that one of the reasons the dropout rate is so low at OWSD is

for inclusion and outreach.

"This excellent programme not only provided financial assistance but also demonstrated a holistic approach in developing the next generation of scientists and a commitment to be part of the lived experiences of its fellows through low and high waters".

Felix Dube, at the University of Cape Town, South Africa, host supervisor of full-time PhD Fellow Regina Abotsi, from Ghana

because Fellowships staff are in regular contact with the students and the institutes, providing careful, flexible, and attentive administration of the awarding of all funds, including travel, study fees and additional personal support allowance provided by the programme.



herself in the fields of Physiology and Medicine. Abotsi also received the L'Oréal-UNESCO Sub-Saharan Africa Young Talents Award in 2019 and first prize in the 2020 Science Symposium hosted by the Universities of Cape Town and Stellenbosch, South Africa.



favour in late 2018. For this, I remain greatly indebted to you."

PhD Fellow Regina Abotsi, from Ghana

PhD Selection

In 2022, the OWSD PhD Fellowship was awarded to 25 women from 17 scientifically and technologically-lagging countries (STLCs). More than half (59%) of these fellows were awarded in fields where women are typically under-represented (engineering, physics, astronomy, and mathematics) and an exceptional 40% of all new fellows are working in the field of engineering sciences. Responding to reduced global mobility during the COVID-19 pandemic, the

programme now benefits from increased technical capacity to conduct selection meetings online with a zero carbon footprint, and especially enjoys a more diverse range of scientific reviewers, 35 in 2022 coming from 20 countries (18 in the Global South) and including 15 alumnae from the OWSD Early Career Awards programme. These reviewers bring firsthand experience of challenges faced by scientists in the Global South and OWSD alumnae benefit from the rich experience,



insights and contacts gained from participating in such committees.

Ongoing PhD Fellows

The OWSD Secretariat maintains close communication with current fellows, ensuring timely collection and organization of progress reports, payment of host universities, management of extensions, return visits, and organization of conference support.

With travel restrictions lifted, the number of PhD fellows





"I want to be in the boardroom. I want to be part of the policy mechanism. I want my influence to go higher than the classroom."

Pamella Kageliza Kilavi-Ndege, 2018 OWSD PhD Fellow in Physics from Kenya

Pamella Kageliza Kilavi-Ndege, 2018 OWSD PhD Fellow in physics studying risk assessment of enhanced naturally occurring radioactive materials and heavy metals in selected areas of Kenya. Kilavi-Ndege was awarded an OWSD 'sandwich' fellowship which means she is based at the University of Nairobi in Kenya (her home country) but receives OWSD funds to travel to the University of the Witwatersrand in South Africa for research visits where she can benefit from additional resources and expertise to complement her research.

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TO KNOW MORE ABOUT 2022 PHD FELLOW PAMELLA KAGELIZA

Bienvenue



2016 PhD Fellow Lalasoa Niain'ny Felamboahangy from Madagascar at the 8th Pan Africa Mosquito Control Association (PAMCA) Annual Conference and Exhibition in Addis Ababa, Ethiopia. The conference theme was 'Harnessing local institutional and community support for the elimination of vectorborne diseases (VSDs). Thanks to OWSD conference support, Felamboahangy travelled from her host institute, the University of the Witwatersrand in Pretoria, South Africa to Addis Ababa to present her study on how to optimise irradiation doses on mosquitoes, thereby controlling the population of the Anopheles funestus mosquito and preventing the spread of diseases like malaria. Felamboahangy completed her fellowship in December 2022 and is expected to graduate in July 2023.

participating in conferences increased, with destinations worldwide including Denmark, United Kingdom, United Arab Emirates, Sweden, Spain, South Africa, Rwanda, Malaysia, and Germany. To assist fellows, the Secretariat provided guidance on avoiding predatory conferences

(a much appreciated and necessary service) as well as support throughout the visa application process.

CLICK OR SCAN



TO KNOW MORE ABOUT 2022 PHD FELLOWSHIP DATA AND STATISTICS

A physicist from Sudan perfecting nanomaterials for clean water

Physics isn't known for being the most approachable of scientific subjects, but for Maram Ali Ahmed Musa, this was part of its appeal – "Physics is maybe one of the hardest sciences," she says, "but I guess I wanted a challenge."

"When I see impact, that's what gives me as a scientist a sense of achievement."

Maram Ali Ahmed Musa 2017 OWSD PhD Fellow in Physics from Sudan

Musa completed her Bachelor's and Master's degrees in general physics at the University of Khartoum in Sudan before focusing on materials science for her PhD. With the support of the OWSD Fellowship, in 2022 she completed her research on synthesizing nanomaterials for water treatment at Universiti Putra Malaysia (UPM). She investigated the optimal size





and concentration of nanomaterials to remove both organic and inorganic pollutants from water. Despite the under-representation of women in physics, Maram felt encouraged as the number of female students at the university was greater than then number of male students. Currently back in her home country working as a lecturer at National Ribat University in Sudan, Mousa is preparing for a postdoctoral research visit to the École Polytechnique in Paris.



CAPACITY: OWSD EARLY CAREER FELLOWSHIPS

The Early Career (EC) Fellowships Programme, launched in 2018, is a prestigious award of up to USD 50,000 offered to women who have completed their PhDs in Science, Technology, Engineering and Mathematics (STEM) subjects and are employed at academic or scientific research institutes across the developing world.

By the end of 2022 the programme has supported 61 early career women scientists to build up ambitious laboratories, research activities and groups in their home countries.

Over 3 years, EC fellows enhance their leadership and management skills and establish connections with a range of public and private sector partners to potentially transform their research into

2022 Early Career Fellow Sadia Rahman works at the International Centre for Diarrhoeal Disease Research, Bangladesh. Thanks to OWSD Support, she will integrate cutting-edge technology to reduce the spread of drugresistant bacteria that cause diseases such as cholera, salmonella, and shigellosis in Bangladesh.



"Investing in women is not only the right thing to do, it is the smart thing to do."

Ban Ki Moon Former UN Secretary General

marketable products or increase impact on a wider scale. Honing their communication and outreach skills, fellows also learn to effectively present their research to different audiences,

Early Career Fellowship

ELIGIBILITY

- Women in STEM with a PhD degree
- From 66 eligible countries
- Employed at a university or research institute in any of the 66 eligible countries

INCLUDES

 Up to USD \$50,000 over 3 years for equipment, training, & more

FUNDED BY

- Main donor: Canadian International Development Research Centre (IDRC)
- 1 fellowship is supported by Aspen Institute Italia



thus attracting new collaborators and potential funders to ensure the longevity of their research projects.

This year we received a record number of eligible applications (75). Following the recommendations of the selection committee, 25 candidates were awarded from 16 countries. Fifteen of these countries have OWSD National Chapters, confirming that these communities are essential for disseminating information about OWSD programmes and providing encouragement and support to potential applicants.

The impact of Early **Career Fellows activities**

Analysis of progress reports submitted by Early Career

Fellows and Alumnae reveal that although the recipients of the EC Fellowships are women, when looking at the long term outcomes across several impact indicators the beneficiaries of the programmes are in fact almost equally men (45%) and women (55%). These findings are in line with literature on gender and development, which points to the fact that investing in women is a guaranteed mark of success when it comes to long term equitable and sustainable development processes.

During 2022, the OWSD Secretariat supported 55% of OWSD Early Career Fellows to participate in various scientific events. Most popular were conferences, followed by meetings,

61 Fellows awarded 37 Fellowships completed

Ongoing

Drop-outs

scientific training and seminars. Other training events built the soft skills of the fellows in leadership, English language and business management.

By supporting their participation in such events, OWSD is also empowering the fellows to take up important roles. More than half of the fellows attended the events as presenters. Some were part of the event-organizing committees, while a few chaired sessions of the events. Through the events and other professional development activities that the OWSD Secretariat facilitates, 66% of the Early Career Fellows were able to establish collaborative partnerships with research, academic and corporate organizations to conduct research, supervise students, and organize learning exchanges and fundraising.

In 2022, OWSD welcomed a new funder on board - the Aspen Institute Italia will support the costs of one Early Career fellowship. This is the first step towards a mutually supportive collaboration and Aspen thus adds its prestigious name to this hugely successful programme developed and sponsored since 2018 by the Canadian-based International Development Research Centre (IDRC). It is hoped this new funding possibility for single fellowships will be attractive as a first step for other organisations to collaborate with OWSD.







2022 Early Career Fellow Margarita Ruiz Olazar is based in

the Computer Science Faculty at Comunera University in Paraguay and is leading a team to develop machine learning and pattern recognition techniques to analyze a database of neurodegenerative diseases. The goal is to identify potential predictors of recovery for neurological injuries.

An immunologist from **Mozambique working to find** a locally available treatment for COVID-19

The COVID-19 pandemic revealed the vulnerability of many countries in the Global South, particularly their ability to access treatments and vaccines. Immunologist Raquel Matavele Chissumba was inspired to develop a local solution to the problem, focusing on Moringa Oleifera, a plant commonly used in Africa to treat various conditions. Chissumba's research, funded by a 2020 OWSD Early Career fellowship, compares the levels and profile of cytokines in COVID-19 patients before and after exposure to Moringa leaf extracts, as well as the diversity and profile of the gut microbiome.





Chissumba hopes that her work will shed light on a locally accessible treatment for COVID-19, as well as the impact of the disease on tropical African populations.

"I like to think of things that can help us, that we can use based on the resources we have. The lack of things is the biggest inspiration in my life. I want to help my country."

Raquel Matavele Chissumba 2020 OWSD Early Career Fellow based at the Instituto Nacional de Saúde in Mozambique



CLICK OR SCAN O READ THE STORY OF ULEL MATAVELE CHISSUMBA

VISIBILITY: OWSD AWARDS & STORYTELLING

This year has been fundamental for raising the visibility of OWSD fellows, National Chapters and the Organization as a whole.

The main vehicle for this has been an emphasis on storytelling through the innovative OWSD Visions project. International visibility is also provided for women scientists from developing countries through awards as well as opportunities for OWSD fellows to present their research at highlevel conferences.

2022 Awards

Awardees benefit from visibility at high-level conferences and events within their area of research and are often celebrated by national media in their home countries and recognised by government officials.

From 2021 the yearly focus of the awards has been on research areas





OWSD Awards

ELIGIBILITY

- Women in STEM with a PhD degree
- Citizens from 66 Eligible Countries
- Demonstrable impact on the research environment
- Contribution to UN SDGs.

INCLUDES

- USD 5,000 prize
- Attendance to international events and visibility

FUNDED BY

• The Elsevier Foundation

related to the United Nations Sustainable Development Goals (SDGs). In 2022 the focus was on SDG 13: climate action and the environment.

2022 Awardees

In 2022 six early career women from Bangladesh, Guatemala, Nicaragua, Rwanda, Sri Lanka and Yemen were awarded, working on a range of topics including microbiology, hydrology, aquatic ecology, environmental engineering, tropical forest ecology and geotechnical engineering.

The awardees were announced on 11 February 2022, the International Day of Women and Girls in Science. Each had the opportunity to speak at online conferences including the annual meeting of the American Association for the Advancement of Science (AAAS) in February and the International Conference on Gender Action and Climate Change in March.















30-58

Age range (years old)

SDG 13 Focus on SDG 13, **Climate action**

2022 OWSD AWARDEES



Abeer Ahmed Qaed Ahmed

Microbiology- and nanotechnology-based solutions to pressing problems such as carbon emissions, drug-resistant pathogens, and fossil fuel dependence. Yemen



Gawsia Wahidunnessa Chowdhury

Conservation of aquatic ecosystems and threatened species in Bangladesh. Bangladesh



Myriam Mujawamariya

Responses of native tree species in Rwanda to climate change. Rwanda



Heyddy Calderon

Secure and sustainable water sources for vulnerable populations in Central America. Nicaragua



Flor de Mayo González Miranda

Landslide prevention for vulnerable areas in Guatemala. Guatemala



Ashani Savinda Ranathunga

Turning industrial and agricultural waste into anthropogenic (man-made) soil for soft ground improvement and mine rehabilitation. Sri Lanka



"This award is an inspiration to me. I am joyful and honored by the recognition of my work; but I also feel the responsibility to keep pushing boundaries for the women who come behind us."

Heyddy Calderon, 2022 Awardee

2022 Awardee Heyddy **Calderon** is working to provide secure and sustainable water sources for vulnerable populations in a region of Central America known as the Dry Corridor, spanning Guatemala, El Salvador, Honduras, Nicaragua, and Costa Rica.



Owing to the COVID-19 pandemic, however, it was not until July that the opportunity arose to hold an in-person awards ceremony to honour them, at the EuroScience Open Forum (ESOF) in Leiden, the Netherlands, from 13-16 July 2022. The awardees presented their research during a panel discussion on 'The Braided River: Women in science, careers and recognition', exploring the nonlinear journeys that define the careers of many women researchers. The panel was led by Ylann Schemm, the Director of the Elsevier Foundation, and Kleinsy Bonilla, the OWSD Vice President for Latin America and the Caribbean



CLICK OR SCAN TO KNOW MORE ABOUT THE 2022 WSD AWARDS

OWSD Storytelling

Storytelling can be a very powerful tool for women scientists from developing countries to promote their work, overcome barriers, and inspire others to pursue careers in science.

In 2022, OWSD collaborated with Italian filmmaker Nicole Leghissa and selected National Chapters to launch 11 new films as part of the OWSD Visions series. To achieve this, a training and knowledgetransfer programme in audiovisual storytelling was developed by the filmmaker/ trainer, to equip OWSD members and local

IN 2022

11

New films released 6 **Early Career fellows** are protagonists in the films B

Film festivals organized and attended by fellows



Film produced with the British Broadcasting Corporation (BBC)



In partnership with the International Science Council (ISC), OWSD organized a Women in Science Film Festival at the World Science Forum in Cape Town, South Africa. The festival was hosted at a historic cinema in the city, showcasing 10 short films from the OWSD Visions series and attended by over 100 delegates.

filmmakers with the skills to produce and showcase science stories in an audio-visual format. The latest additions to the series feature six Early Career fellows from Benin, Cameroon, Republic of Congo, Nepal, Ecuador, and Bolivia, as well as OWSD members from Colombia, Jordan, Pakistan, and Senegal. The films were showcased

in three prominent events. In February, an online panel discussion took place with the International Science Council (ISC) in February, including a local filmmaker from Nepal.

An in-person event in Trieste, Italy, took place in November, with over 100 attendees from local science institutes viewing the films on a large screen and contributing to the panel discussion with expert speakers from Trieste University and the director of the Trieste Film Festival. Finally, the films were presented to great acclaim during the World Science Forum in Cape Town, South Africa in December, where they were attended by the UNESCO Assistant Director General of Science. Inclusion of the films

in these prestigious events means that the accomplishments of women scientists from developing countries are being viewed and appreciated around the world, and their positive reception reflects the significant impact of the stories they tell. The films also featured in a social media countdown to the end of the year, generating high engagement and clicks on the video links.



TO WATCH THE OWSD VISIONS

In addition, OWSD partnered with the International Science Council (ISC) and the BBC to produce a film featuring Early Career fellow Elizabeth Bandason from Malawi, which has been viewed around 190,000 times and registered impressive numbers on the platform, attracting the highest number of news in that series by same margin.





"I was so desperate to try to save lives... maybe working in a hospital ...but then I realised there was a bigger way I could do it... by helping people eat safer food, and live in a safer environment - and that's the whole motivation of my science."

Elizabeth Bandason, 2018 Early Career fellow

Elizabeth Bandason,

2018 Early Career fellow, protagonist of the BBC film "The scientists saving Malawi's crops", who dreams of setting up an Entomology Centre in her home country and has found a toxin-free method (using sophisticated sensory equipment) to deter the diamond-backed moth from ravaging the cabbage crops her father used to douse with toxic fertiliser.



CLICK OR SCAN

TO WATCH FILM FEATURING EARLY CAREER FELLOW LIZ BANDASON



Events and international influence

In December 2022, in partnership with the International Science Council, OWSD was able to provide

funds for a delegation of 19 OWSD members from 15 different countries to attend the 2022 World Science Forum (WSF) in Cape Town, South Africa.

The OWSD delegation was able to bring its expertise and insights into these high-level conversations by actively participating in different sessions at the festival,





including the Global Knowledge Dialogue, hosted by ISC Board Members.

OWSD hosted another panel session at the WSF on "Getting Women into Academies and Scientific Leadership: Mentoring Works". The session, attended by over 300 people, was designed to inspire a new generation of women researchers and scientists to step into leadership roles in their places of work and in national and international scientific organisations. Tonya Blowers, OWSD Coordinator, moderated the event, which began with three 'Ignite Talk' presentations by Elizabeth Bandason, Priscilla Mante, and Olubukola Babalola. The event highlighted the significance of mentoring for young women scientists' development and the need for support in their career paths.

National Chapter representatives from 15 African countries were able to have their first in-person meeting, share best practices and work on synergies among chapters. The OWSD Secretariat clarified National Chapter regulations and members received training from the Nairobi-based Training Centre in Communications (TCC) on how to create your own podcasts (presented live by Joy Owango with

2022 Awardees attended the EuroScience Open Forum (ESOF) in Leiden, the Netherlands, in July 2022. After being awarded, they joined a panel discussion on 'The Braided River: Women in science, careers and recognition', where they explored the often nonlinear journeys that define the careers of many women researchers, and talked about which criteria may be best used to define and recognize exceptional achievements for women and for all scientists. From left to right, OWSD Vice President for Latin America and the Caribbean Kleinsy Bonilla, 2022 OWSD Awardees Gawsia Chowdhury, Myriam Mujawamariya, Ashani Ranathunga and Flor de Mayo Gonzalez and Elsevier Foundation Director Ylann Schemm.

> a pre-recorded video by Adelle Onyango).

The Forum provided a great opportunity to highlight OWSD fellows' and members' contributions to scientific research, especially in the African region.

TRAINING AND OPPORTUNITIES

OWSD provides a wide range of opportunities and training to its fellows, awardees, and members, aimed at developing their research and leadership skills, and increasing their career prospects.

Connecting and Informing The OWSD website

(www.owsd.net) is a digital gathering point for our members, hosting membership profiles and creating long-term connections between members, National Chapters and other stakeholders. In addition, OWSD disseminates relevant announcements, updates, and opportunities over a network of almost 12,000 people across 10 different mailing lists. All OWSD members can benefit from this important communication channel that provides opportunities for



partners and other stakeholders to submit requests for their materials to be shared.





The **OWSD Observer**, the digital newsletter which completed its fifth year, also provides highlights of OWSD activities to the OWSD community, including calls for applications to the PhD and Early Career fellowships programmes and awards. The newsletter is the place for introductions to newly selected candidates, as well as celebrating those who have just graduated. National chapter activities are highlighted and each edition also features an interview with a current PhD fellow and an Early Career Fellow.

Research skills

AuthorAID is a global network that aims to support researchers in developing countries to publish and communicate their work. The network provides a range of services including mentoring, online resources, and workshops to help researchers improve their research writing and publishing







NSA SALIH MAHMOLIC



Social media

OWSD social networks are an important vehicle for disseminating opportunities, sharing news and echoing the impact of OWSD programmes within our global network. Customized content is daily posted on 4 social media platforms (Facebook, Twitter, LinkedIn and Instagram), engaging diverse audiences. Posts use multimedia content (images, videos and animations) and are linked to news articles on the OWSD website or videos on OWSD's Youtube channel.

OWSD online communities continue to grow, with the most significant growth being the recently created LinkedIn account (+ 190% compared to 2021).





Congratulations to Dr. Ephifania Geza from Zimbabwe for achieving her PhD in hD in Bioinformatics, at the Faculty of Health Sciences, University of Cape Town!

Dr. Geza was awarded the OWSD PhD fellowship in 2015, under the full-time study scheme. She successfully presented her thesis on "Investigating local ancestry inference models in mixed ancestry individual genomes" and in now ready to make a big impact in her field! OWSD Zimbabwe Chapter OWSD SA National Chapter

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OWSD Facebook: owsd.net

OWSD Youtube: OWSD Secretariat

OPERATIONAL STRUCTURE AND DONOR COMMITMENT

OWSD is a programme unit of UNESCO, the United Nations Educational, Scientific and Cultural Organization, and is administered under TWAS, the World Academy of Sciences. OWSD is governed by an Executive Board elected by OWSD members every five years.

Sida	
SWEDISH INTERNATIONAL DEVELOPMENT COOPERATION AGENCY	
Swedish International Development Cooperation Agency (Sida)	
PhD fellowship programme and Secretariat support	
THE ELSEVIER FOUNDATION	
The Elsevier Foundation	
Awards programme	
OWSD additionally the who contributed	
Isaac Babock and three	

The Secretariat of OWSD is hosted on the campus of the Abdus Salam International Centre for Theoretical Physics (ICTP) in Trieste, Italy. OWSD is grateful to the following donors for their generous support of OWSD programmes in 2022:



nks the following private donors to our programmes in 2022: nd OneSkin Technologies

anonymous donors'.

FINANCIAL SUMMARY

Financial income and expenditure for the years 2022 is reported in the tables below.*

INCOME ¹	AMOUNT (USD)
Balance brought forward from 2021	1,279,354.71
International Development Research Centre (IDRC), Canada	2,129,727.57
Swedish International Development Agency (Sida)	1,645,845.83
Elsevier Foundation, USA	200,000.00
Contributions from OWSD members	2,629.25
Interest	112,523.00
TOTAL INCOME	5,370,080.36

	AMOUNT (USD)	
EXPENDITURE	APPROVED BUDGET	SPENT
(1) Fellowships		
1.1 PhD Fellowships	2,000,000.00	862,993.20
1.2 Early Career Fellowships	2,050,000.00	474,910.00
1.3 Additional Early Career Fellowships	785,000.00	772,554.20
1.4 Fellowship grants continuation	551,000.00	517,235.19
Subtotal for (1)	5,386,000.00	2,627,692.59
(2) Workshops, Trainings and Resources		
2.1 PhD Fellows Additional Support Allowance Funds	200,000.00	84,000.00
2.2 Early Career Orientation Workshops	90,000.00	45,000.00
2.3 Fellows and Members Training Curriculum - Global South Partner 1	100,000.00	0
2.4 Fellows and Members Training Curriculum - Global South Partner 2	100,000.00	56,990.62
2.5 OWSD Mentoring Network	10,000.00	2,000.00
2.6 OWSD Conferences and Events	20,000.00	8,604.77
Subtotal for (2)	520,000.00	196,595.39

Continue on next page

	AMOUNT (U	ISD)
EXPENDITURE	APPROVED BUDGET	SPENT
(3.1) OWSD Membership	115,000.00	44,509.90
3.1.1) OWSD Executive Board (including elections)	15,000.00	3,750.00
3.1.2) OWSD General Assembly	0	0
3.1.3) Alumnae support	100,000.00	40,759.00
3.2) OWSD Awards Scheme	120,000.00	55,000.00
3.2.1) Awards	50,000.00	25,000.00
3.2.2) Travel of awardees	50,000.00	25,000.00
3.2.3) Alumnae support	20,000.00	5,000.00
3.3) Communications, Visibility and Outreach	174,000.00	16,980.55
3.3.1) Video consultant	30,000.00	0
3.3.2) Graphic design consultant	10,000.00	0
3.3.3) Global online search portal for OWSD members and fellows	90,000.00	0
3.3.4) Software licenses and tools	4,000.00	402.96
3.3.5) Digital and print materials (including website)	30,000.00	10,149.75
3.3.6) Staff travel	10,000.00	6,427.84
Subtotal for (3)	409,000.00	116,490.45
4.1) Monitoring & Evaluation	60,000.00	26,348.80
4.1.1) M&E Consultant	30,000.00	25,389.13
4.1.2) Research (e.g. indicators and eligibility)	20,000.00	0
4.1.3) Mid-term evaluation	0	0
4.1.4) Database (FileMaker) consultant	10,000.00	959.67
4.2) Implementation costs	1,928,600.00	752,750.77
4.2.1) Programme support staff	1,368,600.00	563,824.17
4.2.2) Administrative and finance support staff	430,000.00	162,771.95
4.2.3) Operational expenses	130,000.00	26,154.65
Subtotal for (4)	1,988,600.00	779,099.57
Management costs	487,732.00	170,103.78
TOTAL EXPENDITURE	8,791,332.00	3,889,981.78
Savings on prior years' obligations		371.358.94
Excess (shortfall) of income over expenditure		1,851,457.52

Amount available at the beginning of the period Transfer from OWSD account End of service entitlements

Reserve Fund balance end of period

2. The purpose of the Reserve Fund is to cover the end of service entitlements of OWSD Staff.

1. All contributions are expressed in US dollars and have been converted using the UN official rate of exchange in effect at the time the contributions were received.

AMOUNT (USD)
200,000.00
0
(15,713.48)
184,286.52

TOWARDS 2023

Empowering Change: Reflections on 2023 and our Call to Action.

OWSD PhD and Early Career Fellows, OWSD members and National Chapters, OWSD executive board members, all supported by the OWSD Secretariat, alongside the support of key partners and especially donors, have continued to make a positive impression on their surroundings and to further the understanding of and enthusiasm for the excellent and essential work of women scientists from developing countries.

The new programme strategy was launched in 2022 and much of the foundation has now been laid to ensure that in 2023 OWSD can implement the exciting strategies proposed, including working closely with host institutes to encourage gendertransformative policies that will benefit OWSD fellows and women in science generally. Working closely with a monitoring and evaluation consultant and donors, we look forward to carefully defining, recording and monitoring impact through a robust theory of change and results-based management models. We also look forward to reaping the rewards of efficient administrative procedures created in 2022 through the streamlining of documentation and workflows - and the close work undertaken with colleagues at UNESCO headquarters to do this.





As OWSD members' increasing invitations to preside and attend at world science events shows, the Organization is internationally recognised and appreciated. In 2023 the Secretariat and executive board will work together to source additional funding in order to ensure a base level of security for programmes and to increase the level and number of staff working at OWSD on membership, National Chapters, communications and fundraising.

As we reflect on another remarkable year, we are inspired by the tremendous achievements of talented women scientists in the developing world and the impact they are making in their communities. We invite you to join us in our mission to empower and uplift women in science by contributing to our fundraising efforts.

Your generous support will enable us to continue providing vital resources, mentorship, and training programs to women researchers in low- and middleincome countries. By investing in OWSD, you are directly contributing to the advancement of scientific knowledge, innovation, and sustainable development across the globe.



CLICK OR SCAN FOR MORE INFORMATION ON HOW TO SUPPORT OWSD





Women. Science. Development.



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