

ANNUAL REPORT

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OWSD



2015 PhD Fellow Kausila Timsina, the first OWSD fellow from Bhutan, poses with copies of her PhD thesis (completed in 2021) from Sikkim University, India

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LETTER FROM THE OWSD PRESIDENT




This year saw the continuation of the COVID-19 restrictions but also the continuation of OWSD activities, showing the resilience and innovation of our members and staff! Jumping to the middle of the year, I was incredibly grateful to you all for my re-election as President which took place on 14 June, two days before my 74th birthday. This was followed by the election of four Vice-Presidents (three were re-elected, with a new VP for Latin America and the Caribbean from Guatemala) and four Regional Members (one was re-elected, with new members from Ecuador, Egypt, and Zimbabwe).

You may recall that during 2020 we rebooted our membership so that only active members remained. As a result, our numbers dropped to 4,833, but rose to 6,231 by the end of that year. I am now happy to report that our membership stood at 7,877 by the end of 2021. I am also delighted to report that this year **nine** new National Chapters launched. We are particularly pleased to see the increase in National Chapters in Latin America and the Caribbean. This was largely due to the efforts of the Guatemala chapter which effectively recruited members and sup-

ported the establishment of 4 new chapters in Latin America, bringing the total number of chapters in the region to 10, from only 2 in 2018.

But the highlight for me – and for many of you as well, I am sure – was the General Assembly held over two weeks in November. When the staff first suggested ten days online, I thought they were crazy, but as usual, they were spot on. What an amazing experience this Women, Science and Development GA proved to be! Splendid keynote addresses, panel discussions, workshops, conversations and more. For me one of the special experiences was wandering virtually among the poster presentations and chatting to some of the authors. And we ended with an exhilarating final live event in Trieste, bringing together local supporters of OWSD. These included government officials, universities, research institutions and industry. I was blown away when so many of them (including Italian ministers) spoke eloquently about their support for our organization and women, science and development in general. The fact that this event was joined by 14 National Chapters around the world celebrating in their own countries and greeting each other via online streaming added to the unique and uplifting experience.

Enjoy reading this year's fascinating Annual Report, both its content and wonderful photographs which bring our work alive. My grateful thanks to all involved in its production and to our marvellous Secretariat for their incredibly hard work in what has been an extremely challenging year.


Jennifer Thomson
OWSD President



2020 Early Career Fellow Sylvie Tebitendwa from Uganda with a new delivery of consumables for her lab purchased with fellowship funds

OWSD IN 2021: AN OVERVIEW

In 2021, OWSD – and the world – was still reacting to the COVID-19 pandemic. We learned a lot in 2020, including our own versatility and resilience. But while 2020 was a year of stopgap measures, quickly improvised adaptations, and adjustment to new procedures, 2021 was about extracting order from chaos, building on what we had learned in a crisis in order to improve and expand on the things that had worked, and finding better ways of coping with persisting challenges.

The work of OWSD scientists (and hence of the Secretariat) continued to be affected by the limitations on mobility. The need to take everything online has encouraged and enabled OWSD to be as inclusive and diverse as possible across all of our programmes. The result has often been greater delegation to the regions, members and fellows. The OWSD Executive Board elections were held online for the first time in June 2021, with record participation of members (more than 2000 voting), from countries across all four OWSD regions. OWSD fellowship and awards alumnae are now regular members of OWSD selection committees, combining their invaluable local, national and regional knowledge of the specific challenges facing women in STEM with their own direct experiences as beneficiaries of the programmes. Important innovations in storytelling, through the OWSD Visions filmmaking project, have put the narrative into the hands of the story-makers and subjects. And OWSD National Chapters have been inspired by each other as their numbers have continued to proliferate and as they have been able to read about each others' activities through the OWSD website, where they are able to post their own news and announcements.

The OWSD 6th General Assembly and International Conference, an eagerly anticipated gathering planned to take place in Trieste, Italy in November 2020, was postponed that year to 2021. Little did we know then that a year later, the pandemic would still be preva-

lent worldwide, and that we would host our biggest ever online event, lasting ten days and attended by over 1,500 OWSD members.

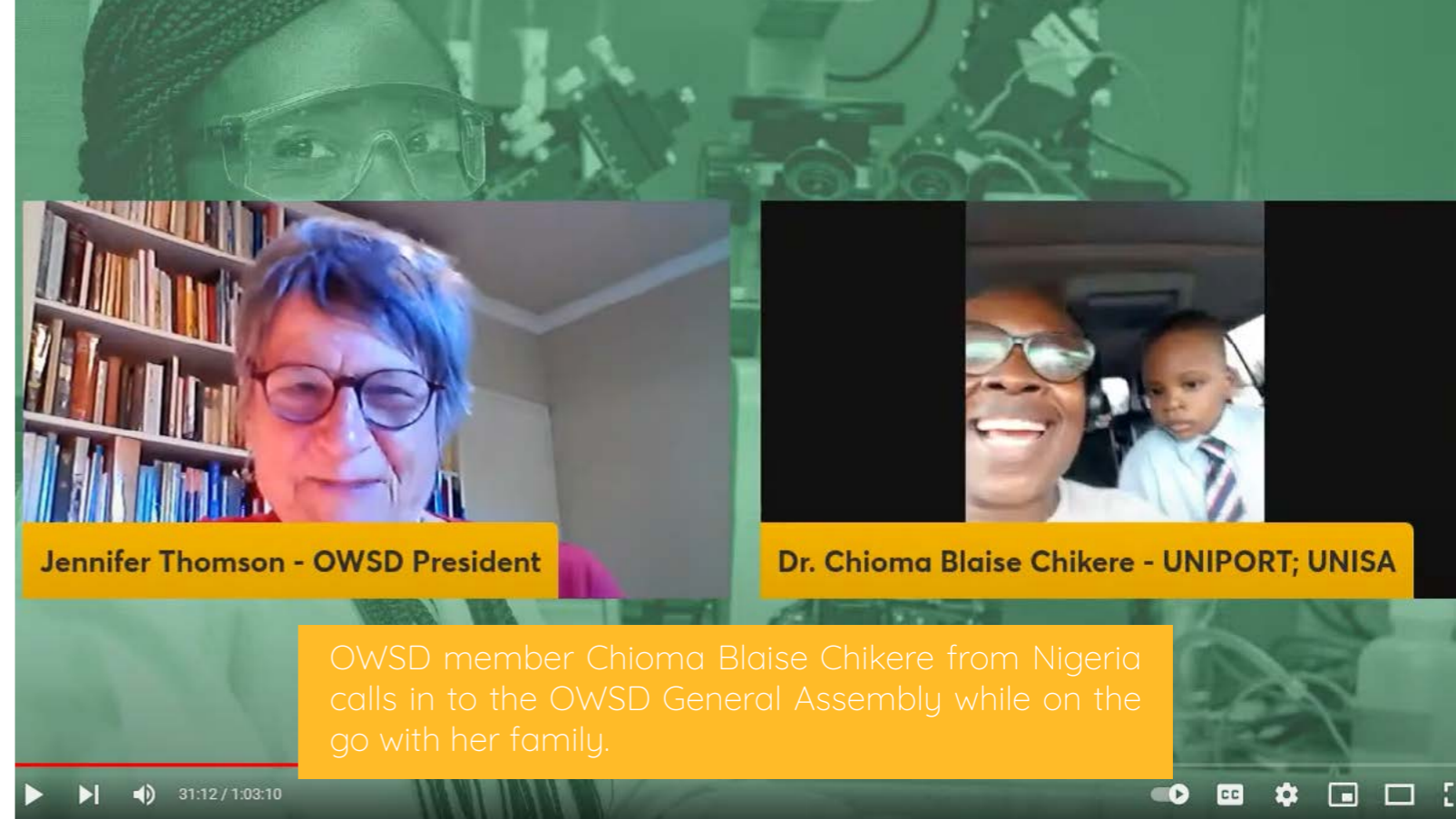
The success of the General Assembly was one of many triumphs out of adversity, and the Secretariat was generally able to use the unexpected 'down time' positively to make long-term improvements, and permanent innovations, including getting up to speed with online platforms and the coordination of virtual meetings, securing access to interactive and inspiring courses and training opportunities for our fellows, and organizing participatory selection committees.

Underlying the success of our funded programmes are the voluntary efforts of OWSD members and National Chapters throughout the Global South to recruit, mentor, and otherwise support other women scientists so that they can prepare outstanding research projects, find relevant supervisors, write excellent applications, and become confident and professional science communicators. The year 2021 has seen unbroken growth in membership numbers, especially in Latin America, which grew 44% in membership in just one year and surpassed the Asia-Pacific region in terms of total number of members.

It is clear that the post-pandemic academic and scientific landscape will look very different, even as labs re-open and as we slowly return to in-person gatherings and education. What this means for women scientists in particular, and even more specifically those from the developing world, remains to be seen. Will economic fallout mean that already resource-constrained departments become hesitant to take on women faculty who may be more likely to require career breaks? Or will more flexible, family-friendly working schedules become standard? Will an increasingly online world mean greater access to international networks for researchers in developing countries? Will governments in the Global South recognize the importance of investing in research and development that serves their countries' needs, reducing dependence on the North? Whatever the medium- and long-term outcomes, OWSD will remain dedicated to working with our vast network of women scientists throughout the developing world to find the best solutions to support and promote them, and to make sure their voices are heard and amplified in development processes.



2016 PhD fellow Marilyn Ronoh from Kenya celebrates her 2021 graduation from the University of Nairobi.



OWSD PHD FELLOWSHIPS

In the 24th year of OWSD's flagship [PhD fellowship programme](#), 27 new fellowships were awarded to women from the developing world to pursue PhD research at host institutions throughout the Global South. The OWSD Secretariat continued to support an additional 134 active fellows awarded previously, navigating many challenges presented by the COVID-19 pandemic including travel delays and prolongations of research timelines, necessitating fellowship extensions. Despite these delays, 24 fellows successfully graduated with their PhDs, making a total number of 338 OWSD PhD graduates.

The PhD fellowships, awarded since 1998, promote 'South-to-South' mobility. Fellows have the option of completing either a full-time or 'sandwich' fellowship, to undergo research at host institutes. The fellowship covers full funding for the PhD fellows' monthly stipends when on site, return travel, visa and health insurance costs. Tuition and registration fees are negotiated with the host institute. All funding for the PhD fellowship programme is provided by the Swedish International Development Cooperation Agency (Sida).

Of the 551 PhD fellows awarded since the start of the programme*, 161 are new or ongoing in 2021; 338 have graduated and are now OWSD fellowship alumnae.

PhD APPLICATIONS

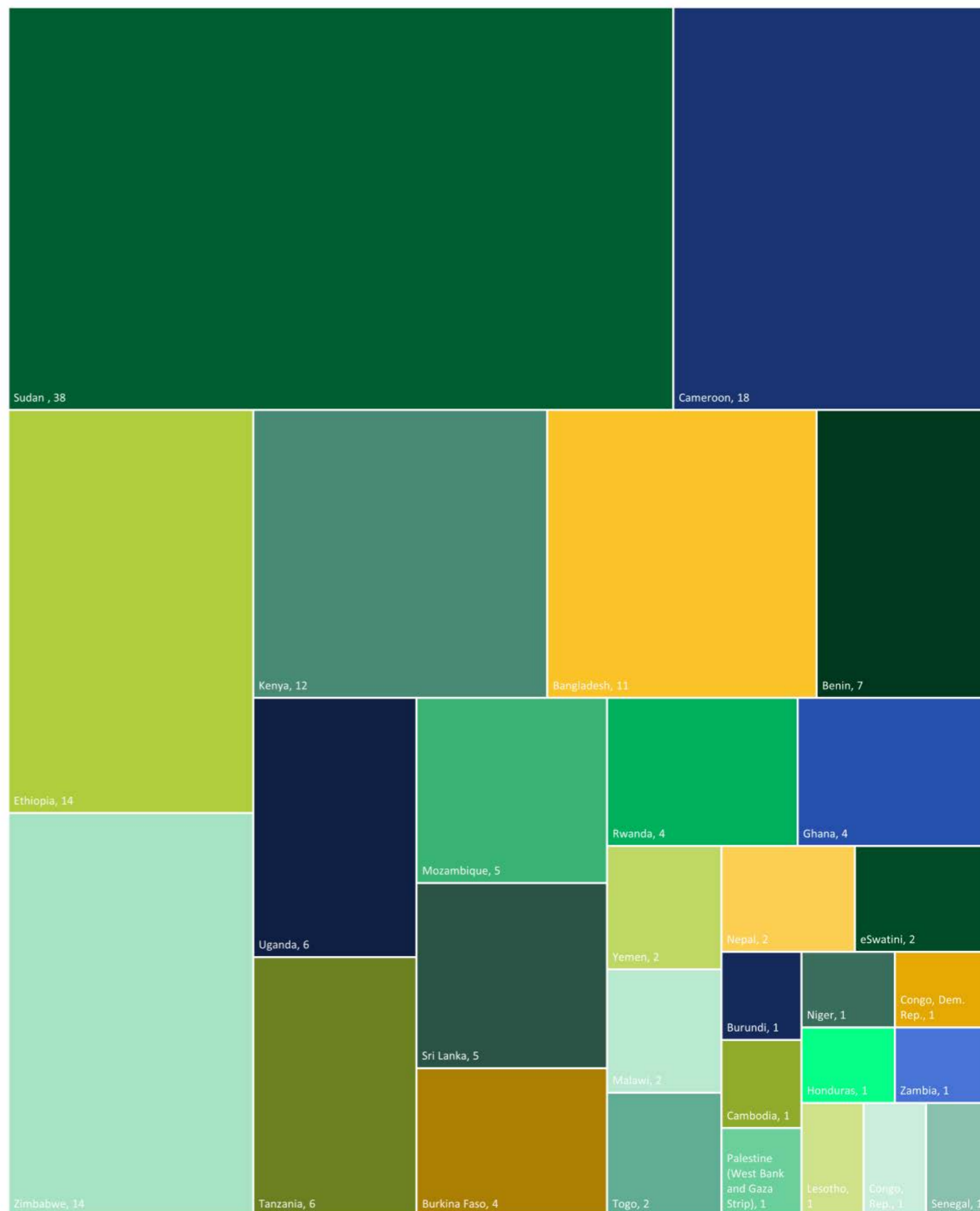
The 2021 Call for Applications for the OWSD PhD Fellowships was open for 2 months (February 15-April 15). For those applicants who could not access their institutes in time to obtain required documentation, the OWSD Secretariat extended the option introduced in 2020 to submit a self-certification form. A total of 168 eligible applications were received. Of these, 131 were shortlisted, and 46 recommended for funding.

Where from? Eligible applications were received from 29 countries, with 65% coming from 20 Least Developed Countries (LDCs). For the second year running, the highest number of applications came from Sudan, with 38 applications. Cameroon had the second highest number, with 18, followed by Ethiopia (14), Zimbabwe (14), Kenya (12), and Bangladesh (11). One application each was received from both Cambodia and Honduras, for the first time in the programme's history (Honduras was made eligible in 2017; Cambodia has been eligible since 1998).

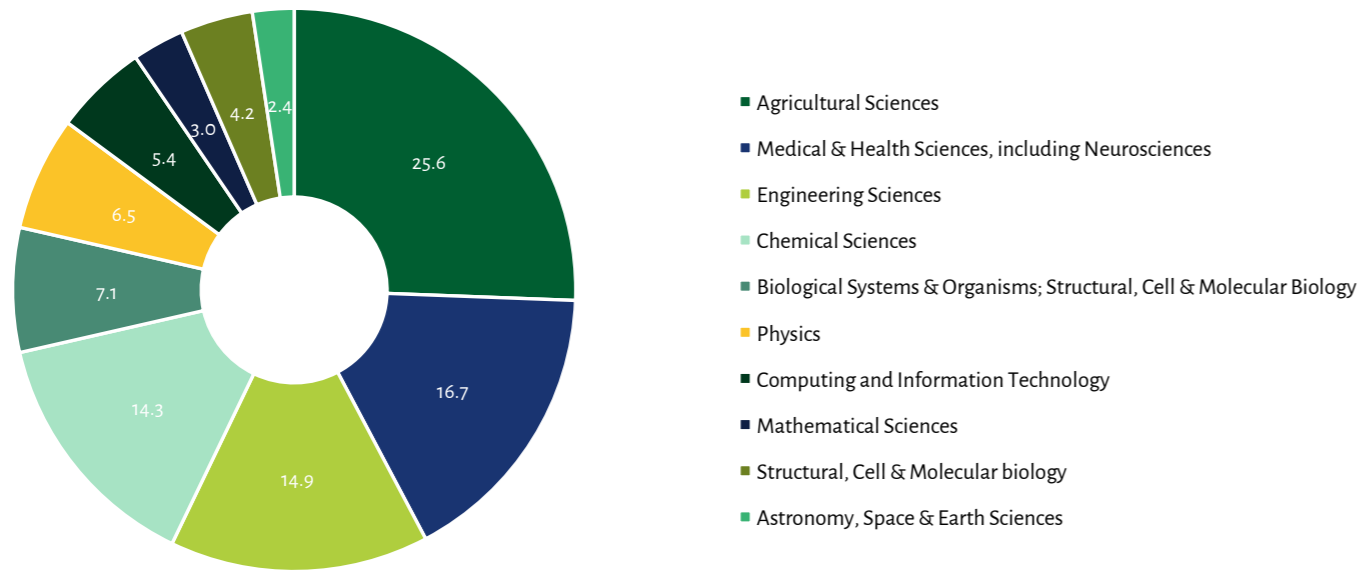
Where to? Applicants selected host institutes in 21 different countries in the Global South. South Africa continues to be by far the most popular host country for applicants, selected by 44.5% of applicants. Malaysia also remains very popular, with 22% of applicants. Applicants selecting host institutes in China remained lower than average for the second year (5%, compared to 3% in 2020, 10% in 2019 and 9% in 2018). Latin American countries, on the other hand, continued to grow in popularity—most notably Brazil, which was

*The number of fellows awarded does count those who have dropped out, but does not count those who cancelled their fellowships before signing a final award agreement.

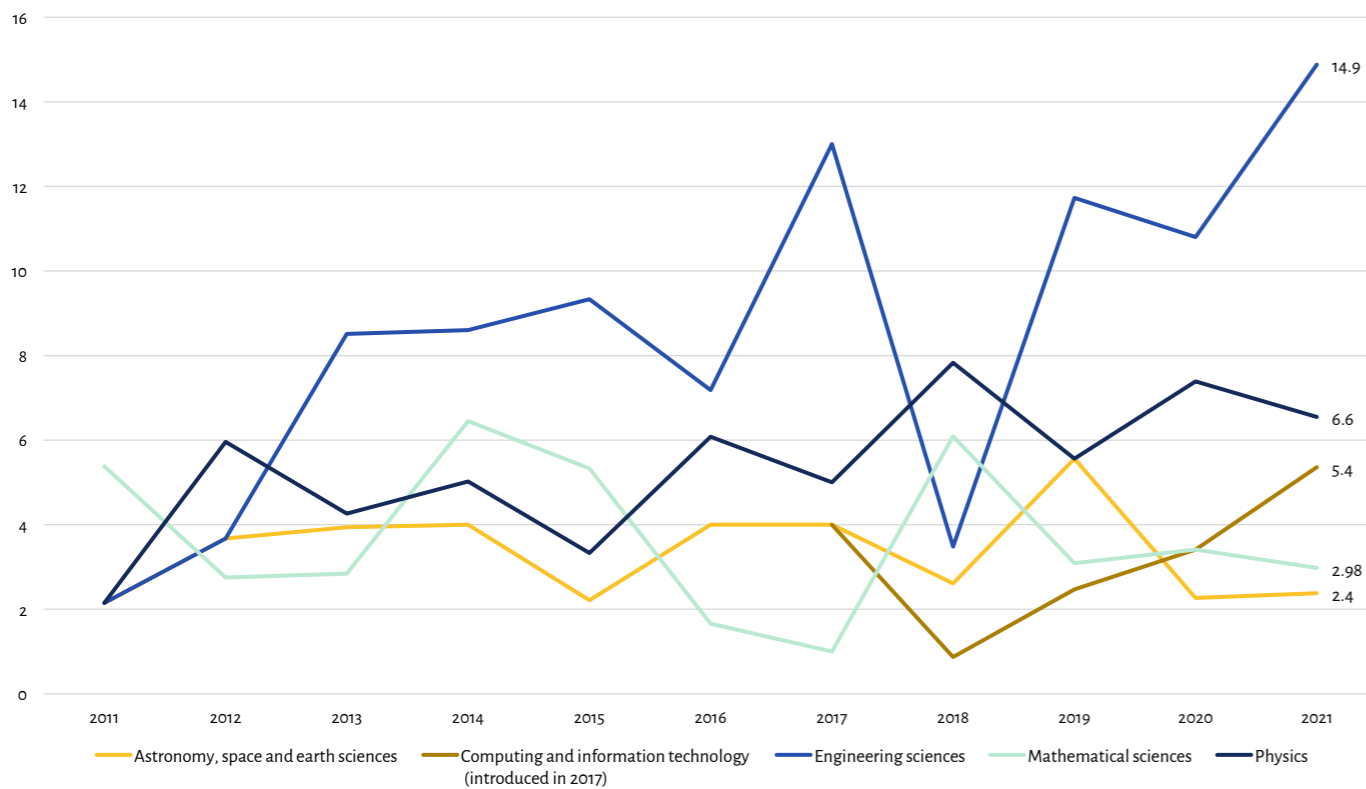
2021 PhD Fellowship applications by country



2021 PhD Fellowship applications by discipline



PhD Fellowship applications in fields with largest underrepresentation of women, 2011-2021



the third most popular host country, selected by 12 applicants, 7% of the total (compared to 5% in 2020, 2% in 2019 and 3% in 2018). Aruba and Chile were also selected for the first time by 1 applicant each. In the Arab region, Jordan was selected host for the first time.

In which STEM subjects? While agricultural sciences continued to be the most popular disciplines among applicants, accounting for about a quarter (26%) of applications, their popularity is trending somewhat down in recent years, from a high of 40% in 2017. Medical and health sciences remained the second most popular discipline, with 17% of applicants. Applications in engineering have grown significantly and steadily, from 2% in 2011 to 11% in 2020 and now 15% in 2021, making it the third most popular discipline for the first time. While still making up a small share of the total, the number of applicants in computing and information technology—a field where women are particularly underrepresented—also continued to grow, from only 1 application in 2018 to 6 in 2020 and 9 (5% of the total) in 2021. The share of applicants in mathematics (3%) and physics (7%), also traditionally male dominated fields, remained roughly the same as previous years.

PhD AWARDS

Following the first online selection committee held in 2020, the 2021 selection of PhD fellows was held again online in May 2021. Moving to an online selection committee has enabled OWSD to expand and diversify the pool of reviewers, who now include OWSD executive board members as well as OWSD-Elsevier Foundation awardees. The 32 members of the 2021 selection committee came from 15 countries; 84% of reviewers were women, and 65% were based in the Global South.

Following the selection committee's recommendations, 27 women were selected for the 2021 PhD fellowship, 19 full-time fellows and 8 sandwich fellows. The 2021 fellows include the first ever awardees from Cambodia and Honduras; the fellow from Honduras is also the third fellow awarded from Latin America and the Caribbean.

Where from? The awardees came from 18 countries: Bangladesh (1); Benin (1); Cambodia (1); Cameroon (3); Democratic Republic of the Congo (1); eSwatini (1); Ethiopia (2); Ghana (1); Honduras (1); Mozambique (1); Palestine (1); Rwanda (1); Sri Lanka (4); Sudan (3); Uganda (1); Yemen (1); Zambia (1); and Zimbabwe (2). Fourteen, or 52%, of the awardees came from Least Developed Countries.

Where to? South Africa continued to be the most popular host country for awarded fellows, with 9 out of 27 (33%) traveling there for their PhD studies. Malaysia was the next most popular destination, selected by 5 fellows, followed by Brazil (3), Botswana (2), and China (2). Burkina Faso, Chile, Jordan, Rwanda, Sudan, and Thailand will host one fellow each; it is the first time that Chile and Jordan have been host countries for OWSD fellows. Burkina Faso, Rwanda, and Sudan are considered least-developed countries (LDCs), meaning that hosting an OWSD fellow should contribute to capacity building for both the fellow and the host institute.



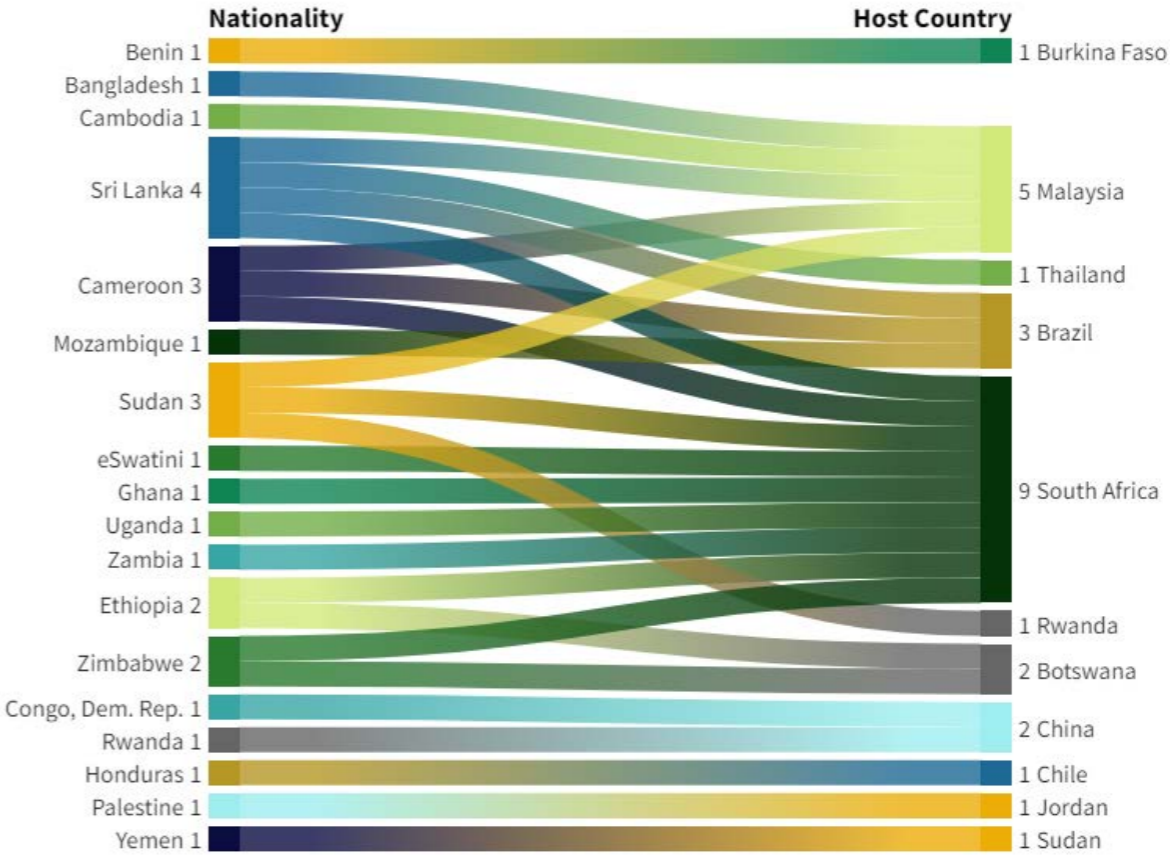
MAYRA NÚÑEZ VALLECILLO
2021 PhD FELLOW, HONDURAS

The first OWSD PhD fellow to be awarded from Honduras since it became eligible in 2017, Mayra is completing a full-time fellowship at the Austral University of Chile, where she is researching the effects of river discharge on populations of two coastal marine fish species important for artisanal fisheries in the Honduran Caribbean.



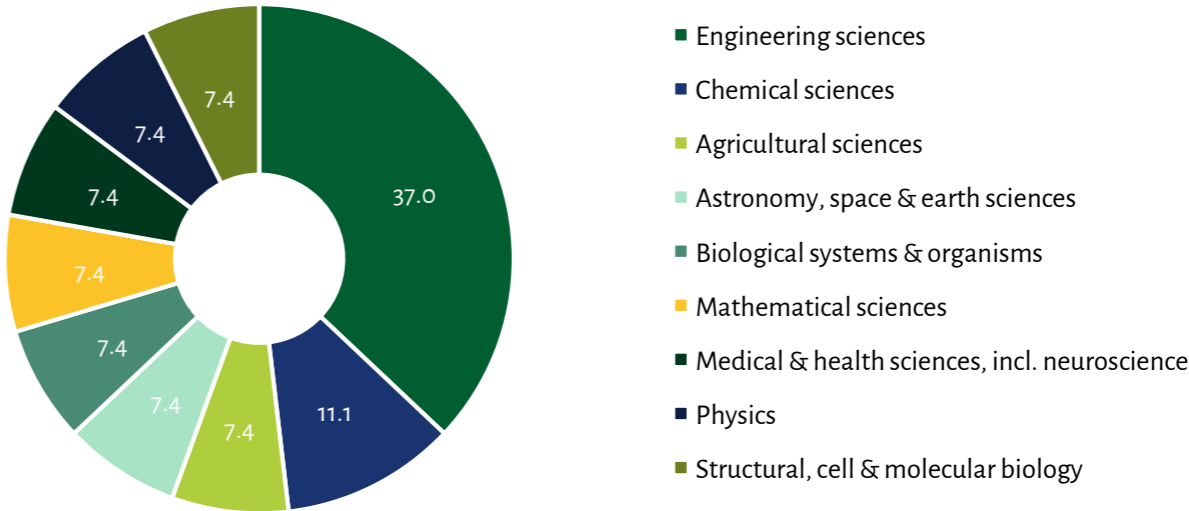
PhD fellow Sumaia Al-Ghuribi from Yemen working in the lab at the Center for Artificial Intelligence Technology, Universiti Kebangsaan Malaysia

2021 PhD Fellowship awardees: home and host countries



In which STEM subjects? The largest number of fellowships (37%, or 10 out of 27) were awarded in the engineering sciences, a big increase from previous years (only 7% of awarded fellows were in engineering sciences in 2020, 15% in 2019, and 6% in 2018). Three fellowships (11%) were awarded in the chemical sciences, and two (7%) each in agricultural sciences, astronomy, space & earth sciences, biological system & organisms, mathematical sciences, medical and health sciences, physics, and structural, cell and molecular biology.

2021 PhD Fellowship awards by discipline



2021 OWSD PhD Fellows

Name	Nationality	Study scheme	Host institute	Host country	Project title
Agoriwo, Mary Wetani	Ghana	Full-time	Stellenbosch University	South Africa	Developing a health literacy intervention for early identification, diagnosis and management of Parkinson's disease in Ghana
Al-Darras, Duha A.A.	Palestine	Full-time	The University of Jordan	Jordan	An ontology-based automatic medical consultation system for identifying nutrition deficiency diseases and electrolyte disorders
Aldowma, Tamador Khalil Mansoor	Bangladesh	Full-time	University of Johannesburg	South Africa	Gamma-ray bursts as possible standard candles of cosmological parameters
Amjad Dipa, Mahfida	Bangladesh	Full-time	Universiti Putra Malaysia	Malaysia	Efficient load balancing scheme for dense cellular network using RoF technologies
Bakran, Naayem Abdurraheem Salem	Yemen	Full-time	Al-Neelain University	Sudan	Dosimetric verification of radiotherapy treatment planning system
De Silva, Nelethi Malthi Thusarika	Sri Lanka	Full-time	Rhodes University	South Africa	Early detection of plant diseases with the aid of multi-spectral imaging using deep learning techniques
Dimon, Elodie	Benin	Sandwich	University of Nazi Boni	Burkina Faso	Zootechnical performance of climate-sensitive livestock practices developed by women on small ruminants in northern Benin
Djamilatou, Diddi Hamadjoda	Cameroon	Sandwich	University of Pretoria	South Africa	Petrology and geochemistry of volcanic formations of Rounsou and surroundings (Kapsiki Plateau, far-north Cameroon): Implications on the geodynamic context of the Cameroon volcanic line
Dlamini, Lenye Sebenzile	eSwatini	Full-time	University of Cape Town	South Africa	Engineering nitrilases for enhanced thermostability
Fathelrahman Ibrahim Elsayed, Wala	Sudan	Full-time	ICTP - East African Institute for Fundamental Research (EAI FR) for the University of Rwanda	Rwanda	Ab-initio insights into the formation mechanisms, photocatalytic activity, and magnetic properties of magnetite/silica/titania core-shell nanoparticles
Hailu, Fikrte Woldeyes	Ethiopia	Sandwich	Stellenbosch University	South Africa	Development of bacterial cellulose intelligent film incorporated with butterfly pea anthocyanin for mango freshness monitoring
Humidan, Amna Saga Mohammed	Sudan	Full-time	Universiti Putra Malaysia	Malaysia	Integrated deepfake detection for video
Kavidia Muyembe, Diana	Congo, Dem. Rep.	Full-time	Chinese Academy of Agricultural Sciences	China	A study on pharmacological activities, genetic diversity, chemical profile and physicochemical properties of sweet potato and impact of the cultivars for improving nutritional security and health benefits

Name	Nationality	Study scheme	Host institute	Host country	Project title
Kenfack Tiofack, Saurelle	Cameroon	Sandwich	Universiti Putra Malaysia	Malaysia	Host-guest complexes of three triterpenoid paddlewheels MOFs: Synthesis, characterization, study of some pharmacokinetics properties and DFT calculations
Lombe, Annette Bertilla Mwimba	Zambia	Sandwich	University of Pretoria	South Africa	Assessing the role of microbial ecosystems in bioremediation of lead contaminated sites in Kabwe
Messee Goulefack, Linda	Cameroon	Sandwich	Pontifical Catholic University of Rio de Janeiro	Brazil	Dynamics and synchronization of non-locally coupled neural models: Applications in neuronal diseases
Monh, Neardey	Cambodia	Full-time	Universiti Teknologi Malaysia	Malaysia	Development of BIM-based automated assessment tools for Cambodia green building system
Munas, Fathima Rehana	Sri Lanka	Full-time	Universiti Sains Malaysia	Malaysia	The hot spot and thermal stress phenomenon in Bias Acoustic Liner
Nadarajah, Sareeha	Sri Lanka	Full-time	Asian Institute of Technology	Thailand	Irrigation water management and optimizing irrigation schedules with machine learning and optimization algorithms for sustainable crop production to mitigate the impact of climate change
Nakiranda, Regina	Uganda	Full-time	North-West University	South Africa	Effect of providing eggs as an early complementary food on morbidity of infants aged 6- <9 months (affiliated to Eggcel-growth randomised controlled trial)
Núñez Vallecillo, Mayra Lizzeth	Honduras	Full-time	Austral University of Chile	Chile	Effects of river discharge on populations of two coastal marine fish species, common snook (<i>Centropomus undecimalis</i>) and horse-eye jack (<i>Caranx latus</i>), important for artisanal fisheries in the Honduran Caribbean
Nyakudya, Ratidzo Yvonne	Zimbabwe	Full-time	University of Pretoria	South Africa	Development of a holistic model for environmental degradation and sustainability evaluation during core operations in the sponge iron production: A case study of Simbi steel makers in Zimbabwe.
Peramunugamage, Hemanna Parakramage Anuradha	Sri Lanka	Sandwich	University of São Paulo	Brazil	Design of a framework to foster collaborative learning through a Moodle mobile plugin
Sanga, Pascaline	Rwanda	Full-time	University of Chinese Academy of Sciences	China	Construction and characterization of MXene-functionalized nanomaterials and their application for removal of toxic pollutants from water
Sigauke, Morelyn	Zimbabwe	Full-time	Botswana International University of Science and Technology	Botswana	Analysis of transmission dynamics, optimal control strategies and fractional-order dynamics of Pneumonia 2 disease in a developing country
Simbine, Emelda Orlando	Mozambique	Full-time	State University of Campinas	Brazil	Combination of physical and biological innovative technologies on reducing antimicrobial residues in milk and milk products
Yeruk, Smegns Demelash	Ethiopia	Sandwich	Botswana International University of Science and Technology	Botswana	Rational homotopy type of the components of mapping spaces from odd spheres to elliptic spaces



PhD fellow Loriane Jennifer Ayo Ola Yanclo from Benin (left) presenting her poster at the 7th Africa Higher Education Week and RUFORUM Triennial Conference, December 2021



THOKOZILE MANAKA
2018 PHD FELLOW, LESOTHO

Currently completing a full-time fellowship at University of the Witwatersrand in South Africa, Thokoziile Manka is studying the use of machine learning to discover new patterns in clinical data that could lead to earlier and more accurate diagnosis of Type 1 Diabetes patients. T1D is a growing problem in Africa, with 41 million people in the region anticipated to have the disease by 2045 and a lack of health care resources in underdeveloped countries like Lesotho for diagnosis and treatment.

CONTINUING PhD FELLOWS

In 2021, OWSD had 161 active PhD fellows, including those newly awarded. The COVID-19 pandemic continued to present challenges to these students, preventing them from being able to travel to or from host institutes and making it difficult for them to carry out their PhD research. The OWSD Secretariat responded to fellows' needs with as much flexibility as possible, providing updated flight tickets, remote study allowance, and fellowship extensions. The Secretariat also processed extension requests on a case-by-case basis as fellows approached their original fellowship completion dates. In 2021, 25 fellowship agreements (12% of all ongoing fellows) had been modified due to COVID-19 related circumstances.

Travel grant

Since 2014, active fellows can access an optional conference support fund to travel to academic conferences, workshops or other trainings. In 2020, international travel was limited due to the COVID-19 pandemic and most fellows were not able to benefit from this component of their fellowship. Once it was clear that the pandemic would persist, the OWSD Secretariat extended the travel grants to cover virtual event participation as well as encouraging attendance at regional (rather than international) training events; 6 grants were disbursed in this way in early 2021. In mid-2021, with an easing of restrictions in sight, fellows resumed international travel and requests became numerous once again. In total, 10 fellows used the conference support grant to attend 11 events throughout the year. These include Kanganwiro Mugwanda from Zimbabwe, who attended the ICGEB & The Future of Science: 3rd Bioinformatics Research Symposium in Harare, Zimbabwe in October, and Paola Rocabado Koya (right) from Bolivia, who presented a poster on 'Improving the Restoration of Mountain Forests in Degraded Lands' at the second National Meeting of Ecological Restoration of Argentina, in November.



PhD GRADUATES

Despite many fellows facing delays in their research timelines caused by COVID-19 shutdowns, 24 fellows managed to complete their PhD research in 2021 and graduate with their degrees. This brings the total number of OWSD PhD graduates to 338, since the programme was launched in 1998.

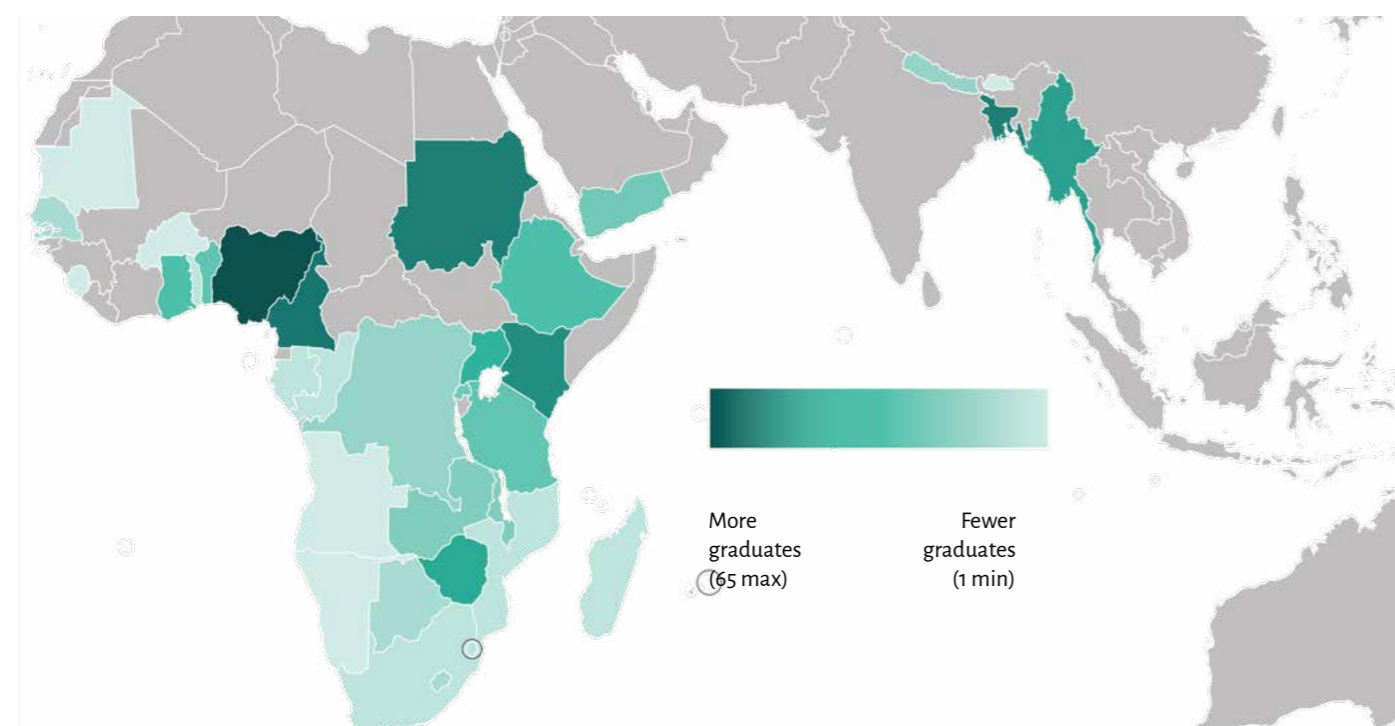
Where from? The 2021 PhD graduates came from 16 countries: Kenya (7 fellows); Myanmar (2); Nigeria (2); and 1 each from Bangladesh, Bhutan, Botswana, Cameroon, the Democratic Republic of Congo, Ethiopia, Gabon, Mozambique, Nepal, Rwanda, Senegal, Sudan, and Yemen. The fellow from Bhutan (Kausila Timsina - see Table of Contents page) is the first graduate from this country.

All together, OWSD PhD graduates originate from 35 countries across Africa and Asia: Nigeria (65); Cameroon (32); Bangladesh (31); Sudan (31); Kenya (26); Myanmar (23); Zimbabwe (18); Uganda (14); Ethiopia (12); Ghana (12); Benin (8); Tanzania (8); Rwanda (6); Yemen (6); Malawi (5); Zambia (5); Democratic Republic of Congo (4); Nepal (4); Botswana (3); Lesotho (3); Senegal (3); Republic of Congo (2); eSwatini (2); Gabon (2); Madagascar (2); Mozambique (2); South Africa (2); Togo (2); Angola (1), Bhutan (1), Burkina Faso (1), Mauritania (1), Mauritius (1), Namibia (1), and Sierra Leone (1).

In which STEM subjects? The 2021 PhD graduates received their PhDs in the following fields: agricultural sciences (8); chemical sciences (3); medical and health sciences, including neuroscience (3); astronomy, space and earth sciences (2); biological systems and organisms (2); structural, cell, and molecular biology (2); mathematical sciences (1); and physics (1).

Among all 338 OWSD PhD graduates, the most popular disciplines are agricultural sciences (22%) and structural, cell and molecular biology (19%). Biological systems & organisms accounts for 15% of graduates, chemical sciences for 14%, and medical and health sciences (including neuroscience) for 11%. Smaller numbers of fellows have graduated in physics (8%), mathematical sciences (6%), engineering sciences (3%), and astronomy, space and earth sciences (2%).

PhD Fellowship graduates by nationality, all-time



*Before 2017, the eligible countries for OWSD fellowships were all Least Developed Countries plus sub-Saharan African countries. From 2017, eligibility is based on a new list of scientifically and technologically lagging countries; therefore, some countries are no longer eligible for fellowships.



PhD fellow Christine Waleguele from Cameroon celebrates her 2021 graduation from University of Yaounde I after completing her sandwich fellowship at Rhodes University, South Africa

2021 OWSD PhD Graduates

Name	Nationality	Fell. year	PhD awarded from	Title of PhD thesis
Abijuru, Delphine	Rwanda	2014	Universiti Teknologi Malaysia, Malaysia	Beam tilt tapered slot antenna arrays with two dimension planes for wireless communication systems
Al-Ghuribi, Sumaia M. A.	Yemen	2016	Universiti Kebangsaan Malaysia, Malaysia	Multi-criteria collaborative filtering recommender systems based on a combination of user reviews elements
Aregbesola-Gbayo, Kofoworola O.	Togo	2014	University of Lagos, Nigeria	Mechanism of nucleophilic aromatic substitution of 4'-substituted-7-phenoxy-4-nitrobenzoxadiazole with anilines in acetonitrile
Brishti, Fatema Hossain	Bangladesh	2013	Universiti Putra Malaysia, Malaysia	Development of texturized vegetable protein from mung bean protein isolate and evaluation of its techno-functionality, structural, rheological and quality
Cossa, Teresa Manuel	Mozambique	2015	Rhodes University, South Africa	A green approach for the synthesis of symmetrical and unsymmetrical 1,2,4,5-tetraoxanes as anti-protozoal agents
Dhakal, Susmita	Nepal	2017	Chinese Academy of Sciences, China	Research on landslide risk of China-Nepal traffic corridor — taking Kathmandu-Geelung section as an example
Diogoul, Ndague	Senegal	2017	Universite Cheikh Anta Diop De Dakar, Senegal	Study of the pelagic structure of the large marine ecosystem of the Canary Current (CCLME) using an acoustic approach fisheries
Feleke, Hirut Getachew	Ethiopia	2015	University of KwaZulu Natal, South Africa	Application of crop models in assessing impact of climate change and identifying adaptation options in a tropical environment in Ethiopia
Kajewole, Deborah Ifeoluwa	Nigeria	2016	Rhodes University, South Africa	An evaluation of the cytotoxic activities of novel artemisinin derivatives: towards targeted therapies for triple-negative breast cancers (TNBC)
Konje, Martha	Kenya	2005	Rhodes University, South Africa	Spatial-temporal variation in forage resource production in Richtersveld National Park, South Africa
Mohamed, Sahar Gamal Elbager	Sudan	2016	University of Medical Sciences and Technology, Sudan	The frequency of JAK2V617F mutation and its effect on the haematological parameters, coagulation and pro-inflammatory IL-6 levels in Sudanese patients with essential thrombocythemia
Mongwaketse, Tiyapo	Botswana	2015	North-West University, South Africa	The potential of fermentation and blanching in improving bioaccessibility and bioavailability of iron and zinc in African leafy vegetables
Muchira, Irene Wanjiku	Kenya	2014	Kenyatta University, Kenya	Crystallization kinetics, structural and optical properties of In-Se-Bi bulk and thin films for reversible phase change memory applications
Muniale, Faith Milkah Wakonyo	Kenya	2016	Masinde Mulira University of Science and Technology, Kenya	Effects of conservation agriculture on ecosystem services and its adoption by vulnerable rural communities of Kenya and Tanzania
Myat, Aye Aye	Myanmar	2016	Graduate School of the Chinese Academy of Agricultural Sciences, China	ChKT112 improves salt/drought tolerance and seed yield of transgenic plants
Myint, Yee Yee	Myanmar	2016	Graduate School of the Chinese Academy of Agricultural Sciences, China	Species identification and behavior of the Asian corn borer, <i>Trichogramma</i> , and parasitic ability evaluation
Nabintu, Ndusha Bintu	Congo, Dem. Rep.	2016	University of Nairobi, Kenya	Genetic diversity and effectiveness of elite indigenous nodulating rhizobia on soybean productivity in South Kivu Province, Democratic Republic of Congo
Nyasimi, Susan Moraa	Kenya	2015	Kenyatta University, Kenya	Bioaccessibility of iron and zinc from micronutrient powder added in germinated porridges among children aged 6-23 months in Homabay county, Kenya
Okumu, Martha Nelima	Kenya	2012	University of Pretoria, South Africa	Glyphosate resistance in <i>Conyza bonariensis</i> (L.) Cronquist: a morphological, physiological, and molecular perspective
Olubayo, Luicer Anne Ignasia	Kenya	2015	University of the Witwatersrand, South Africa	Construction and functional characterization of genotype E of Hepatitis B virus replication competent plasmids with endogenous promoters
Ronoh, Marilyn Chepkurui	Kenya	2016	University of Nairobi, Kenya	Mathematical modelling of HIV/AIDS transmission dynamics coupled with awareness among adolescents and young adults in Kenya
Timsina, Kausila	Bhutan	2015	Sikkim University, India	Assessment of the catchment flow variability of Teesta River basin in Sikkim
Tjeck, Pauline Olga	Gabon	2016	Université des Sciences et Techniques de Masuku, Gabon	Study of the bio-efficacy of <i>Guibourtia tessmannii</i> (Harms) J. Leonard and <i>Milicia excelsa</i> (Welw.), medicinal plants used in the treatment of diabetes in Gabon
Waleguele, Christine Claire	Cameroon	2015	Université de Yaounde I, Cameroon	Chemical constituents of <i>Beilschmiedia louisii</i> Robyns & R. Wilczek, <i>Beilschmiedia obscura</i> Engl. and <i>Persea americana</i> Mill. Structures, synthesis of some derivatives of beilschmiedic acid E and pest control activities (Lauraceae)

2021 OWSD PhD Graduates



Sumaia Al-Ghuribi



Yee Yee Myint



Pauline Tjeck



Kofoworola Aregbesola-Cbayo



Susan Nyasimi



Tiyyapo Mongwaketse



Marilyn Ronoh



Kausila Timsina



Faith Muniale



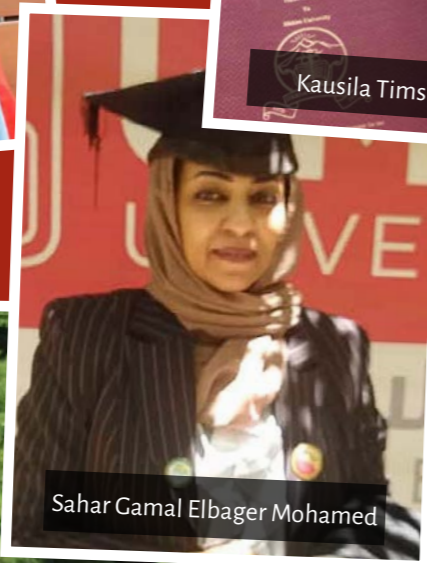
Deborah Kajewole



Delphine Abijuru



Christine Waleguele



Sahar Gamal Elbager Mohamed



Teresa Manuel Cossa



Ndusha Bintu Nabintu



Susmita Dhakal



Martha Konje



Luicer Anne Ignasia Olubayo



Martha Okumu



Irene Wanjiku Muchira



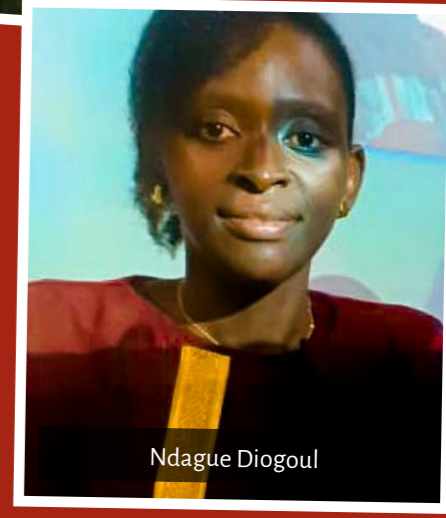
Fatema Hossain Brishti



Aye Aye Myat



Hirut Getachew Feleke



Ndague Diogoul

SPOTLIGHT ON: FATEN BASHAR KAMAL EDDIN



As a child growing up in Syria, Faten Bashar Kamal Eddin “was always thinking about the sky, the clouds,” she says. Her natural curiosity led to an early interest in science, but it wasn’t until secondary school when she began to gravitate towards physics, thanks to one memorable instructor: “Her style of teaching physics made me more attracted to that branch of science”.

Faten decided then and there that a PhD in physics was her goal. After graduating first in her class from Damascus University in 2011, she began to study for her Master’s degree in Syria, but transferred to Alexandria University in Egypt due to the ongoing conflict in Syria. She completed her MSc in nanophysics there in 2016. Faten learned about the OWSD PhD fellowship in 2017, and applied for a full-time fellowship at Universiti Putra Malaysia (UPM). “I can’t describe my happiness when I received an email from OWSD telling me that my application had been selected,” she says.

Upon arriving at UPM, Faten initially intended to focus her research on the function of supercapacitors in laptop computers; however, she quickly found that the facilities at her lab weren’t suitable for that specific project. Her PhD supervisor, who works on surface plasmon resonance (SPR) optical sensors, offered her an opportunity to work with the same technology to improve detection of heavy metal ions. Faten was intrigued, but “I wanted something more related to the human body.” After doing a lot of reading about SPR sensors, she landed on a different application: using the sensors to improve detection of dopamine deficiency in various biological fluids, which is linked to several neurological diseases including Parkinson’s disease, Alzheimer’s disease, schizophrenia, and depression.

Faten uses nanomaterials within SPR sensor chips to enhance their sensitivity and selectivity. Conventional methods for dopamine monitoring, such as high-performance liquid chromatography, mass spectroscopy, capillary electrophoresis, chemiluminescence and electrochemistry, have many drawbacks, and most of them do not meet the growing requirements. Real-time and rapid detection of dopamine is not available using these techniques. This, in turn, impairs the possibility for (minimally invasive, highly specific) loco-regional treatment of neurodegenerative diseases. Nanotechnology-based SPR sensors like the ones Faten is developing, with high sensitivity and selectivity, good reproducibility and stability, represent a new possibil-

ity for the rapid, easy, low-cost and reliable diagnosis of dopamine deficiency.

During her time at UPM under the OWSD PhD fellowship, Faten has published 5 papers, including in Q1 and Q2 international journals, and also received the Bronze Award for her paper, “The Potential of Graphene Oxide Based Surface Plasmon Resonance Biosensor for Dopamine Detection,” at the university’s Virtual Materials Technology Challenge 4.0, in 2020.

After she graduates with her PhD, Faten eventually hopes to return to Syria and establish a research center for physics there. For the meantime however, she says, the situation is too unstable. She is currently in the process of looking for postdoc opportunities that will allow her to continue doing research, as well as providing support to her family back home, where “the financial situation is very bad”. She also hopes to make the path easier for women in physics who are following in her footsteps: “I will certainly do my best to support and assist any woman to complete her study and achieve her ambition.”



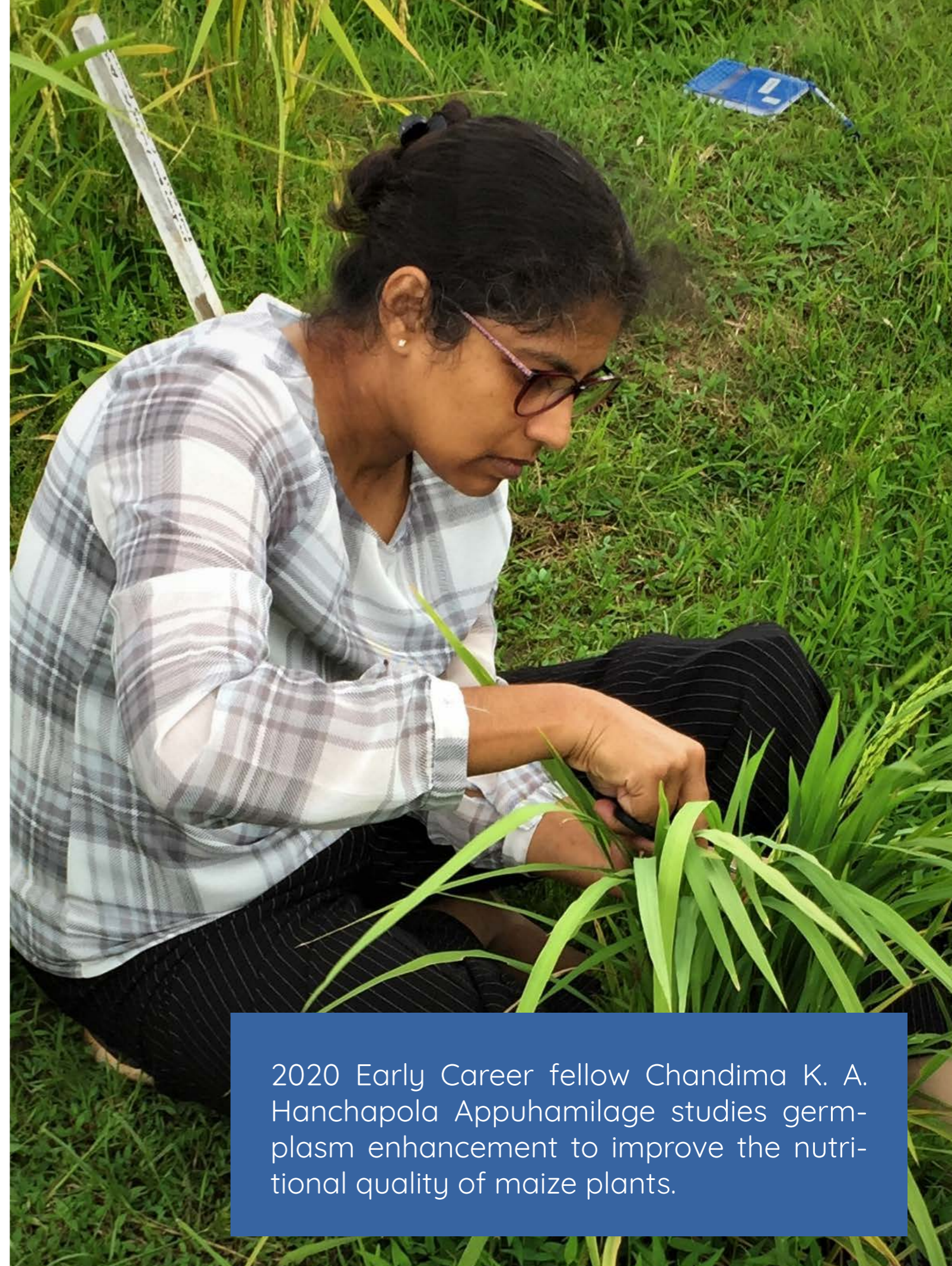
Faten Bashar Kamal Eddin in the lab at Universiti Putra Malaysia

OWSD EARLY CAREER FELLOWSHIPS

The [OWSD Early Career fellowship programme](#) was launched in 2018 with the objective of supporting women scientists in the developing world to lead international level research projects in their home countries. Scientists who go abroad for their PhDs often return to their home countries to find that they are unable to maintain the same level of research that they have been accustomed to, due to lack of funding, infrastructure and other resources. The Early Career fellowship addresses this by providing women scientists with the capacity to establish and equip their own centres of research. The fellowship is offered to women who are within 10 years of their PhD in STEM subjects and who are employed in academic or scientific research institutes in one of the 60 eligible countries. Fellows receive a grant of up to USD 50,000 as well as training in leadership, management, communications and outreach skills. The grant funding is as flexible as possible in order to support fellows to establish environments at their institutions where they can maintain an international standard of research and attract scholars from all over the world to collaborate. Eligible expenses include childcare, research and teaching assistants, and visiting scholars, as well as equipment and consumables, fieldwork expenses, and information resources. An important aspect of the Early Career fellowship programme is innovation and the potential to generate impact on a broader scale; fellows are selected partly on the strength of their proposals to connect with public and private sector partners and convert their research into marketable products.

The fellowship programme was initially funded as a 3-year pilot project by IDRC, the Canadian International Development Research Centre. Sixty-two fellowships were awarded from 2018-2020, to women scientists from 24 countries across Africa, the Asia-Pacific, and Latin America and the Caribbean. No new fellowships were awarded in 2021.

Early Career fellows, like PhD fellows, faced many challenges presented by the COVID-19 pandemic, in particular related to the purchase and transport of supplies and equipment. In 2021, the OWSD Secretariat introduced new features and improvements to respond to fellows' needs. Given that many fellows' institutes are not able to advance funds to cover project expenses, these improvements included a new policy that allowed the Secretariat to approve and process a greater number of advance payment requests. OWSD procurement guidelines as administered under UNESCO, as well as the summary for suppliers' documents, were updated to include suggested improvements identified by OWSD Secretariat staff. The 2018 and 2019 cohorts of fellows were offered an additional 6-month no-cost fellowship extension (bringing the total fellowship support to 36 and 30 months respectively) to be able to complete planned activities delayed due to the pandemic.



2020 Early Career fellow Chandima K. A. Hanchapola Appuhamilage studies germ-plasm enhancement to improve the nutritional quality of maize plants.

WHO ARE THE EARLY CAREER FELLOWS?

The 62 women awarded Early Career fellowships from 2018-2020 come from a wide range of countries and scientific disciplines. They are based in 24 countries; Sri Lanka is home to the greatest number of fellows (8), followed by Kenya (7), Ghana and Nepal (5 each), Bangladesh, Ethiopia, and Tanzania (4 each), Cameroon and Uganda (3 each), Benin, Guatemala, Malawi and Rwanda (2 each), and Bolivia, Burkina Faso, the Republic of Congo, Lao PDR, Madagascar, Mongolia, Mozambique, Myanmar, Senegal, Togo, and Zambia (1 each).

2018-2020 Early Career Fellows by nationality



Research keywords of Early Career fellows



The largest number of fellows were awarded for research projects in the agricultural sciences (17 fellows), followed by medical and health sciences (11), biological systems and organisms (10), and chemical sciences (9). Three fellows each were awarded in astronomy, space & earth sciences, engineering sciences, physics, and structural, cell & molecular biology. Two fellows were awarded in computing & information technology, and one in mathematics. These categories do not capture the true range of subjects studied by Early Career fellows, however. The word cloud above generated from their self-reported research keywords gives a better idea of their research priorities and applications; larger words and topics mean greater numbers of fellows who reported that keyword.

“ The fellowship really catapulted my research work and career growth at both national and international level. The fellowship award was like a seed fund that really helped me bring my ideas into reality. Now, we can generate funds through industrial endeavors and re-invest part of the profit to sustain our research institute and initiate more research initiatives.

- Prativa Pandey,
2019 Early Career fellow, Nepal



2020 Early Career fellow Sylvie Tebitendwa is cultivating microalgae-bacteria flocs—a type of biomass formed from the aggregation of aquatic microbes—in order to increase natural production of food for the Nile tilapia fish, one of the cheapest sources of animal protein for rural communities in Uganda.

CONTINUING EARLY CAREER FELLOWS

All three cohorts of OWSD Early Career fellows were actively carrying out their fellowships in 2021, most of the 2018 fellows—initially slated to be finishing up in 2020—having been granted extensions due to the COVID-19 pandemic, and the 2019 and 2020 cohorts even more significantly impacted by the pandemic.

Many of the pandemic's effects on science have been felt universally: lockdowns that prevent researchers from accessing their labs; shifts in research priorities that redirect funding, lab space, equipment, and personnel; greater time required for teaching responsibilities as institutions moved to online education; increased demands on scientists—particularly women—for childcare and housekeeping tasks; lack of opportunity for collaboration and exchange with other scientists; direct illness from the virus; and mental strain and uncertainty. These factors are often compounded in developing countries, where resources are fewer to begin with and academic and other institutions less prepared to provide tools to help faculty adjust. Procuring equipment and consumables also became far more difficult for scientists in developing countries during the pandemic; these very often must be imported, creating additional administrative procedures and longer delivery times for items that were already subject to strained supply chains.

It is a credit to the OWSD Early Career fellows that despite these difficulties, they made significant progress towards the completion of their research projects in 2021; read on to see what each cohort has achieved.

2018 Cohort

As in 2020, the COVID-19 pandemic imposed many setbacks for the first cohort of Early Career fellows. Eleven out of 19 fellows reported being delayed with respect to their original project timelines; among the reasons cited for these delays included continuing lockdowns, university and laboratory closures, long procurement times for equipment, travel bans preventing research visits, and increased childcare and home responsibilities. Despite these challenging circumstances, 4 of the 19 2018 fellows successfully completed their fellowships in 2021. In light of the exceptional conditions, the OWSD Secretariat offered all 2018 fellows the possibility of a funding extension until 30 June 2022.

Laboratory equipment and consumables remained major expenses for the 2018 cohort in 2021, with half of fellows acquiring new equipment and 81% purchasing consumables; half of fellows also used their funding for training in the use of the new equipment.



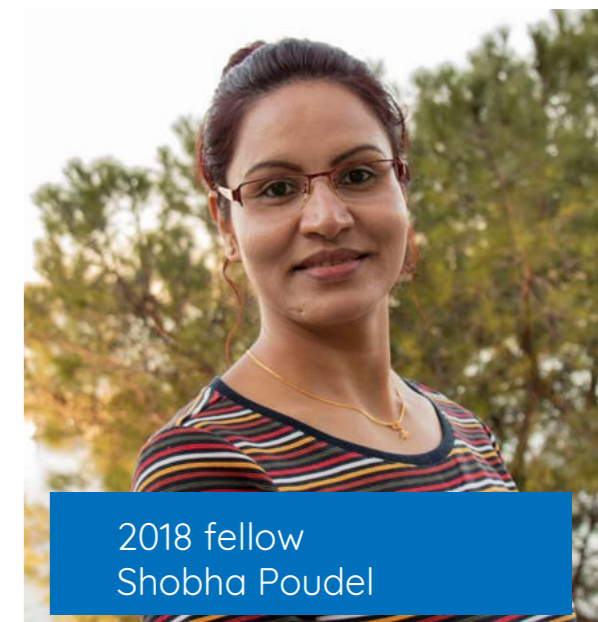
LILIAN KAALE

2018 EARLY CAREER FELLOW, TANZANIA

Through the Early Career fellowship, Lilian Kaale was recognized as a top national expert in mycotoxins (toxic compounds produced by fungi), and was tapped by the Tanzanian Ministry of Agriculture to lead their Tanzania Initiative for Preventing Aflatoxin Contamination (TANIPAC), a project which includes capacity building for master's and PhD students in the study of toxins that affect crops such as maize, peanuts, and cottonseed.

Each one of the 2018 fellows hired at least one MSc, PhD, post-doctoral or other research assistant with their funding, and 31% were able to hire teaching assistants. Five fellows (31%) spent some of their grants on family care assistance costs (e.g. childcare costs in order to undertake the research project, travel support for family members); this may reflect the challenge of sustaining a research project during pandemic-related school and workplace closures.

Many fellows were still prevented from making research visits and attending scientific conferences and meetings in 2021 due to the pandemic, though attendance did increase slightly; 7 fellows attended 13 conferences and meetings in 2021, compared to 11 conferences attended by the same number in 2020. Collaborations with both other scientists and with industry remained strong, with 20 total collaborations reported (18 in 2020). Half of all fellows took part in outreach, communications, or networking activities, and half also attended training events, in subjects including science communications, online teaching and mentoring, leadership and management, and technical skills related to their research. Five fellows were able to propose or influence policy changes (at university, local or national level) based on their research findings, including Shobha Poudel (right), who is now a researcher at the Policy Research Institute of the government of Nepal. She has reviewed and provided feedback on the National Agriculture policy, National Research Policy, and National Water, Sanitation and Hygiene (WASH) Policy. She has also become the Public Policy Instructor for evidence-based policymaking in Nepal.



2018 fellow
Shobha Poudel

The 2018 fellows kept up a strong publication record in 2021, with 27 total publications by 7 fellows either directly or indirectly related to OWSD-funded research, an additional 3 publications accepted, and 12 submitted. Fellows' research assistants and staff were also able to produce 8 publications supported by the fellowship funding. Since receiving their fellowships in 2018, 12 fellows have received additional funding for their research, including Elizabeth Bandason, who was awarded a USD 365,000 grant from USAID in 2021, for a project on digital innovations to improve market access for horticultural produce in Malawi. Two fellows have also been awarded patents: Munawar Sultana from Bangladesh in 2020, for technology related to the expression and applications of immunogenic agents for effective prevention against foot and mouth disease; and Nimanthi Jayathilaka from Sri Lanka, for a method for early prognosis of severe dengue fever based on micro RNA, mRNA and markers of oxidative stress in peripheral blood cells and saliva.

2019 Cohort

The Early Career fellows awarded in 2019 also faced significant delays, with 61% reporting being behind schedule in 2021. Most of these delays related to the COVID-19 pandemic, however other reasons cited for delays were poor security in the region where field work was to be conducted, and slow institutional bureaucracy. Three fellows completed their fellowships during the year, and at least 5 anticipated requiring an optional extension.

Two-thirds of the 2019 cohort purchased equipment for either new or existing laboratories in 2021, and 39% paid for training in the use of new equipment. A large majority (72%) spent funds on consumables. Like the 2018 cohort, the 2019 fellows all used some of their fellowship funding to take on MSc, PhD, post-doctoral

and/or other research assistants, and half hired lab technicians. Four fellows (22%) hired teaching assistants, and five (28%) hired assistance for family care—again, underlining the fact that childcare and other family support is a very real need for early career women scientists.



Mavis Owureku-Asare (right) at her tomato processing and marketing workshop, June 2021

Though travel remained limited in 2021, the 2019 fellows were able to attend double the number of scientific conferences and meetings than in 2020; 7 fellows attended 12 events. Collaborations also gained steam, with 31 collaborations during the year (24 in 2020); 20 collaborations were made with individual scientist or academics, and 11 with industry partners. One example is Mavis Owureku-Asare (left), who was able to partner with Ghana's Ministry of Finance to obtain small business loans for entrepreneurs who attended a tomato processing and marketing training that she conducted, based on solar drying techniques she developed to extend the shelf life and commercial value of tomato-based products. The 2019 fellows were also very active in outreach, communications, and networking, with 67% of fellows using their funding to support activities that included dissemination of educational and technical videos and leaflets, speaking

to secondary school and undergraduate students, and engaging stakeholders in communities affected by their research. Over half (55%) of fellows also attended training courses or events during the year, on topics including research methods, scientific proposal writing, and patenting processes.

The 2019 cohort continued to be very productive in terms of publications, with 25 publications in 2021 either directly or indirectly related to OWSD funding, 2 more accepted, and 14 submitted. Five fellows received additional funding for their research in 2021, including Ossénatou Mamadou from Benin, who received a USD 80,000 grant from the African Centres of Excellence (ACE) partnership's Digital Science and Technology (DSTN) network, for a project to use the applied mathematics tools of geometric analysis and wavelet transforms to understand the processes behind changing climate variables (radiation, water vapor, sensible heat, CO₂, etc) in West Africa. One fellow, Winfred Mulwa, has been awarded a patent for her system of magnetic refrigeration that provides a more reliable, cost-effective and sustainable alternative to traditional refrigeration of camel milk in rural Kenya.



2019 Early Career fellow Winfred Mulwa is using magnetic refrigeration to improve storage of camel's milk, an important source of protein in rural Kenya.

2020 Cohort

The 23 scientists in the 2020 Early Career cohort were awarded their fellowships at the height of the COVID-19 pandemic, and therefore faced many initial challenges in getting their research projects up and running; the large majority (78%) of fellows reported in 2021 that they were delayed with respect to their original timelines, and 61% expect to request a fellowship extension.

Despite delays, many of the 2020 cohort succeeded in making significant headway on their research. Eight fellows (35%) were able to purchase equipment for either a new or existing lab, and 13 fellows (57%) purchased consumables; 3 fellows (13%) organized training in the use of new equipment. Oyunchuluun Yadamsuren (right) was able to purchase a benchtop spectrophotometer, computer wading rod to measure water depth, and a multi-parameter water quality meter; these will enable her to develop a multimetric water quality index to measure the health of Mongolia's waterways, based on the presence—or absence—of macroinvertebrate species such as insects, worms and mollusks.

All but one of the 23 fellows used her funding to take on at least one PhD, MSc, postdoc or other research assistant; Jyoti Bhandari, for example, was able to support 3 MSc students and 12 research assistants to gather information and data, for her project to document and validate ethno-pharmacological knowledge related to medicinal and aromatic Plants (MAPs) in Nepal. Two fellows hired teaching assistants, and two used funding for family care assistance (i.e., childcare, travel support for family members).

Despite continuing travel restrictions, 6 fellows were able to attend a total of 13 scientific meetings and conferences in 2021 both in-person and online, including Chandima Ariyaratna from Sri Lanka, who was

able to participate virtually in the United Nations Climate Change conference, COP26. Fellows also initiated a great number of collaborations; 20 collaborations were carried out with individual scientists or academics, and 9 with industry partners. Esperance Munganyinka was able to partner with both a company producing fruit-based products as well as a food processing company in Rwanda, to link with passionfruit farmers' cooperatives and train them in how to recognize and prevent passionfruit woodiness virus disease. Four fellows were also able to use the results of their research to influence policy changes at various levels, like Raquel Matavele Chissumba, who is a leader in the development of Mozambique's National Agenda for Health Research that will set research priorities for the next 5 years.

Because of the delays in beginning their research



2020 fellow Oyunchuluun Yadamsuren is developing a new water quality index for Mongolia

projects, the 2020 fellows were also somewhat delayed with respect to previous cohorts in terms of publications; altogether they produced 14 publications in 2021 either directly or indirectly related to OWSD-funded research, with another 7 publications accepted and 6 submitted. Four fellows also received new funding for their research, including Janelisa Musaya, who received a USD 25,000 grant from the Malawi-Liverpool-Wellcome Trust to study the effects of odour-baited insecticide-impregnated targets on tsetse fly density around Malawi's Vwaza Game Reserve.

AuthorAID training

OWSD has a long-standing partnership with AuthorAid, a Sida-funded project of INASP (International Network for the Availability of Scientific Publications). AuthorAid annually runs a free online MOOC (online course), "Research Writing in the Sciences", targeting researchers from developing countries. Both the 2018 and 2019 cohorts of fellows

have previously participated in the AuthorAid course and found it to be very helpful. In place of a second in-person workshop for the 2020 cohort, not feasible due to the pandemic, the 2020 fellows were invited to participate in the 8-week course in 2021, with a special classroom only for their cohort, a private exchange forum with the trainers, and an additional integrated module on grant application writing developed by AuthorAID on OWSD's request. The course was held from September to November; 15 fellows participated, and invited 6 of their own team members to also attend. The completion rate among Early Career and team participants was 76%.

“

The AuthorAid course equipped me with resources and skills in academic writing. This has significantly improved my proposal and research writing skills.

”

- Mercy Akini,
2020 Early Career Fellow, Kenya



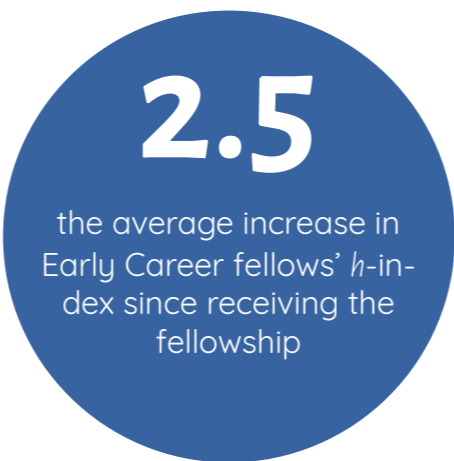
NEWAYEMEDHIN TEGEGNE 2019 EARLY CAREER FELLOW, ETHIOPIA

Newayemedhin Tegegne's OWSD Early Career fellowship was the largest international grant awarded in the Department of Physics at Addis Ababa University. The grant helped her to reopen a lab that had previously been closed, attracting more than 20 visitors since its reopening. Her department is now the only one in Ethiopia able to characterize solar cells, which will lead to improvements in their stability.

ing, with 39% having been awarded one or more separate grants since the start of their fellowships. Nearly all fellows say they have experienced professional growth, and 81% say they have been able to increase output of publications; on average, fellows' h-index, the most commonly used author-level metric for scientific impact of publications, has risen 2.5 points since receiving the fellowship.

The impacts of the OWSD Early Career fellowship don't stop at the individual scientists who receive

them, however; reports from the fellows show that the benefits extend widely across many levels of society, from other scientists and students in fellows' institutes, to businesses and government representatives, and to farmers, local associations, and other communities of stakeholders affected by fellows' research. In 2021 alone, for example, more than 2,000 staff members or students were trained to use equipment purchased with the OWSD grant, and an additional 550+ colleagues or external collaborators were able to benefit from its use. The graphic on pages 33-34 gives an idea of the full impact of the fellowship on both fellows and their communities.



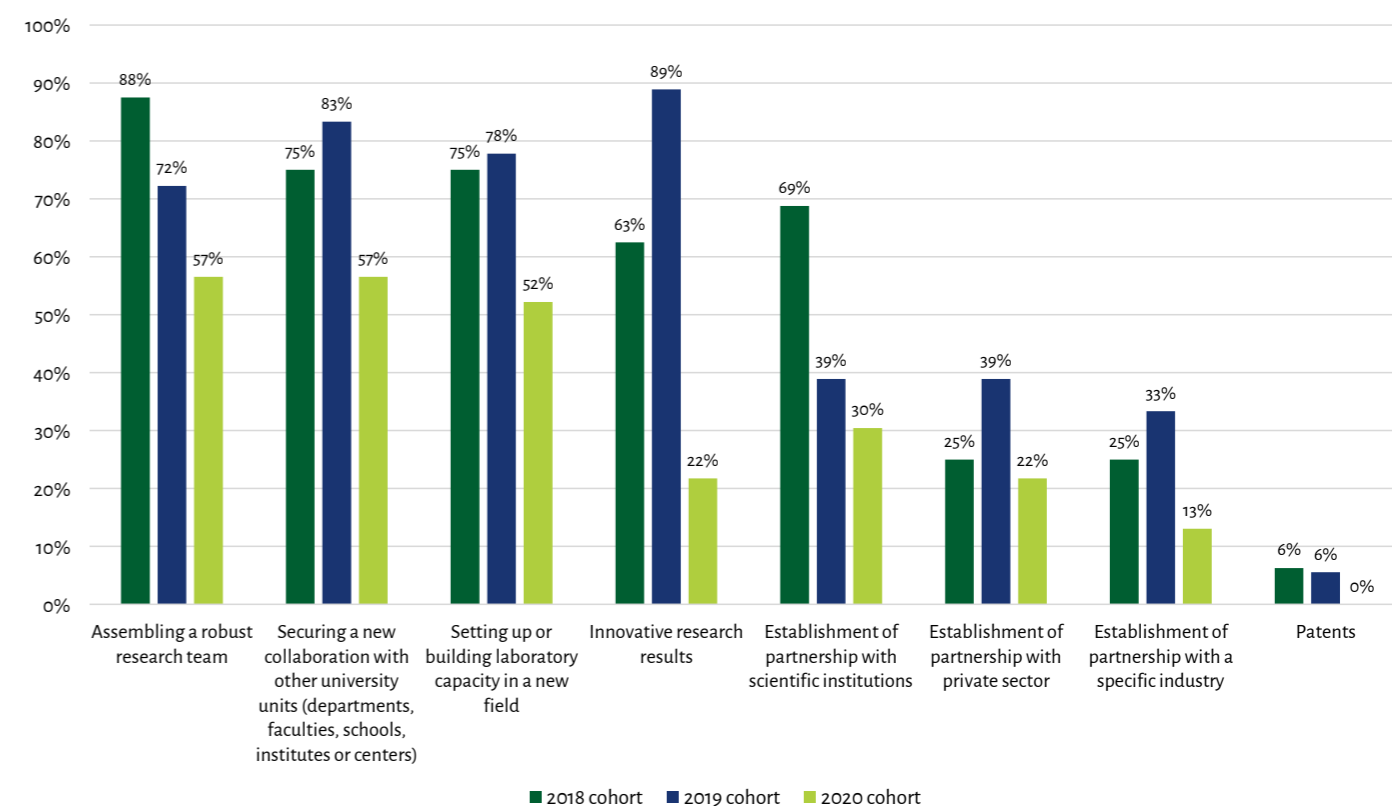
IMPACT OF EARLY CAREER FELLOWSHIPS

After three years of the OWSD Early Career fellowship, it is evident that both the grant funding and the leadership and management training provided by OWSD have a powerful impact on the individual women scientists who receive the fellowships, as well as on others in their institutes and in their communities.

The fellowships funding has been instrumental in helping fellows to achieve their objectives of establishing international-level research centers at their home institutes. More than two-thirds of all fellows say they have been able to set up or build laboratory capacity, to assemble a strong research team, and to secure new collaborations with other university departments or faculties. Many have also been able to form partnerships with external scientific institutions and with private sector companies or industries.

Receiving the fellowship has an immediate effect on fellows' visibility and career progression as well: the large majority of fellows (81%) said that they have received more recognition from outside of their institute; more than two-thirds (68%) received more authority and responsibility within their institute; and nearly one in three have been promoted. The OWSD fellowship has also helped them to attract additional fund-

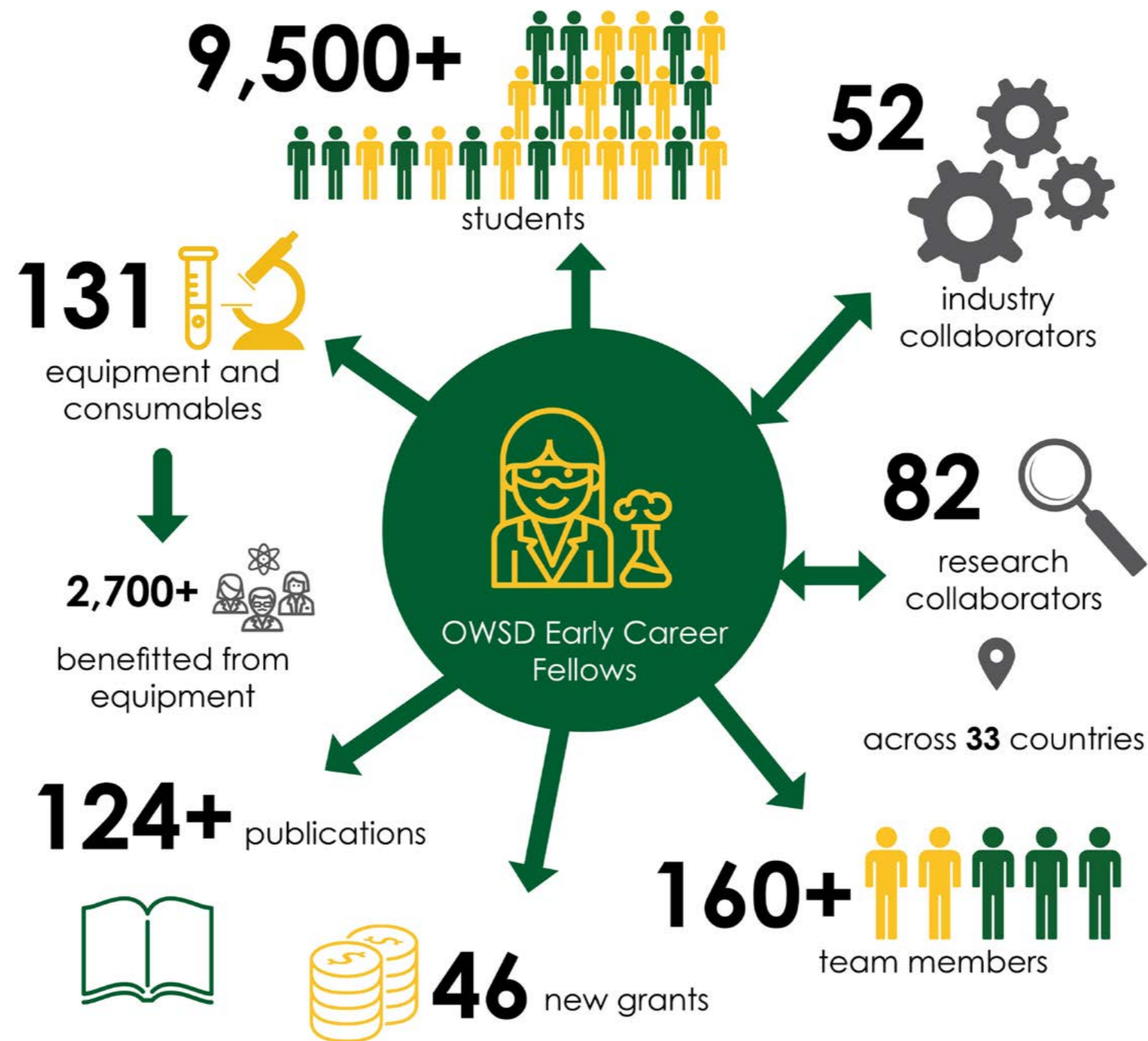
Main areas of achievement reported by Early Career fellows, 2021



What is the impact of the Early Career fellowship?

The following infographic demonstrates the impact and the cumulative results reported in the progress reports of 2018-2020 Early Career Fellows (total 57 fellows) in December 2019, December 2020, and December 2021.

- » 9,500+ students—the total number of students who have directly benefitted from the EC fellows’ teaching, lecturing, presentations, or training activities, including elementary and secondary school students, undergraduate and graduate university students
- » 52 industry collaborators—non-academic partners with whom the fellows have established links for potential application/development of their research products
- » 82 research collaborators—academic partners at other scientific and research institutions
- » 160+ team members—research team members (including MSc, PhD, post-doctorate students, research and teaching assistants, and lab technicians) funded with the EC fellowship funds



- » 46 new grants—new funding opportunities secured in the 2020 reporting period
- » 124+ publications—published journal articles reported by the fellows and based on research results directly and indirectly funded by the EC Fellowship funds (this does not include submitted and accepted publications)
- » 131 orders of equipment and consumables—processed by the OWSD Secretariat in 2019-2021 (this does not include additional items purchased by the fellows’ institutes using the fellowship funds)
- » 2,700+ benefitted from equipment—individuals that were reported benefitting from using the purchased equipment and consumables items for training and research purposes.

SPOTLIGHT ON: SOMPHOUTHONE PHIMMACHAK



Herpetology is the branch of zoology concerned with the study of amphibians and reptiles. Somphouthone Phimmachak, Lao's first herpetologist, didn't follow a straightforward path to her chosen field. As a child growing up in Vientiane, Lao's capital, she was always interested in the outdoors, but not so much in reptiles and amphibians: "I wanted to have a farm," she says. "I liked orange farms, like in the movies." This interest led her to study agriculture at the National University of Laos (NUOL), but once there she found herself gravitating more towards animals than plants. She graduated in 2002 with a specialization in animal science.

While working in the Living Aquatic Resource Research Center (LARReC) at the Ministry of Agriculture and Forestry's National Agriculture and Forestry Institute in 2006, she saw an advertisement for a new Master's programme in biodiversity, run by the university in cooperation with the Wildlife Conservation Society. The advertisement specifically sought students who were interested in studying the Lao newt (*Laotriton laoensis*), a native species that is threatened by being harvested for medicine and the illegal pet trade.

Somphouthone became the first student to sign up for the programme. Her master's thesis focused on the natural history, geographic distribution and conservation research of the newt. Following publication of her thesis, the Lao Newt became the first amphibian to be named as a protected species by the government of Laos.

Somphouthone wanted to continue studying the Lao newt at the PhD level, but there are no PhD programmes in biology offered in Laos. She enrolled at Kasetsart University in Thailand, traveling to and from Laos to conduct her field research. She received her PhD in biological sciences in 2015. When she returned to Laos, she at first went back to her roots, working at the Ministry of Agriculture. Soon, though, she missed the fieldwork and research – "I wanted to make more new generation herpetologists in Lao" – so in 2016 she returned to NUOL to continue working on reptile and amphibian biodiversity.

The number of reptile and amphibian species in Laos isn't known, Somphouthone says. From 1942 until recently, only 16 amphibian species had been reported in the country, mostly by scientists visiting from other countries. Since she and her colleagues began collecting data, though, the number of known amphibian

species is now more than 120, and reptiles more than 200. "This number is going to increase each year," she says. "I've been working on reptile and amphibian biodiversity for 10 years, and I know that there are still new species that need to be described."

In order to find new species – and to document the geographic spread of known ones – Somphouthone and her team search by night, going into Laos's highland forest jungles and other habitats looking in small streams where reptiles and amphibians like to live. They collect specimens from which to extract DNA, which together with information about the animals' morphology and ecology helps them to determine whether the species is a new one. Before receiving the OWSD Early Career fellowship, samples had to be sent abroad for DNA extraction and sequencing, to the US or Thailand, but thanks to the fellowship, Somphouthone will be able to purchase PCR (DNA amplifying) machines and set up a basic lab at her own university for DNA extraction. This equipment will be useful not only to her and her team, but to other faculty and students at the university who need to perform DNA extraction, such as those studying plants and microorganisms: "I'll be able to teach my students and colleagues to use the molecular laboratory for their research."

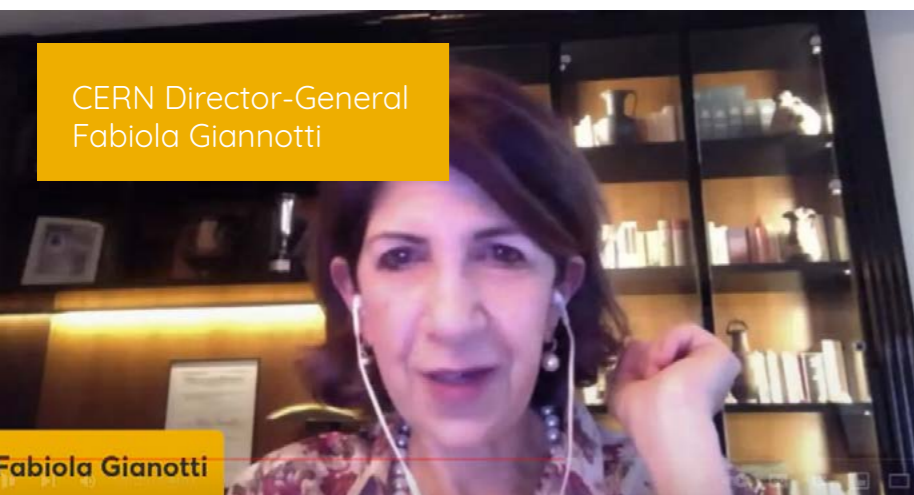
Somphouthone hopes that having the basic equipment for a lab will help to attract and retain more researchers to study biodiversity in Laos. Looking ahead, she said, it will be important to have younger scientists trained and ready to follow in her path: "In the future, I'm going to be older, maybe I can't go in the field. I have to support the new generation who can continue, so that this research doesn't stop with me."



OWSD GENERAL ASSEMBLY

The [6th General Assembly and International Conference of OWSD](#) was held from November 8-19, 2021. Because of restrictions on travel due to the COVID-19 pandemic, the conference was held almost entirely online for the first time in OWSD's 28-year history. Rather than see this as a limitation, OWSD chose to view it as an opportunity for more of OWSD's thousands of members to participate than ever before, as well as a chance to offer members access to high-level speakers and experts. In-person events were held on November 19, the final day of the conference, in 14 National Chapter host countries around the world and at the OWSD Secretariat in Trieste, Italy. More than 1,500 OWSD members, women scientists from developing countries around the world, participated online in the General Assembly and conference.

The conference theme was 'Women, science and development', exploring three areas of relevance: 1) the importance of basic sciences for development; 2) the impact of applied sciences on development and 3) including sex and gender as variables in scientific research.

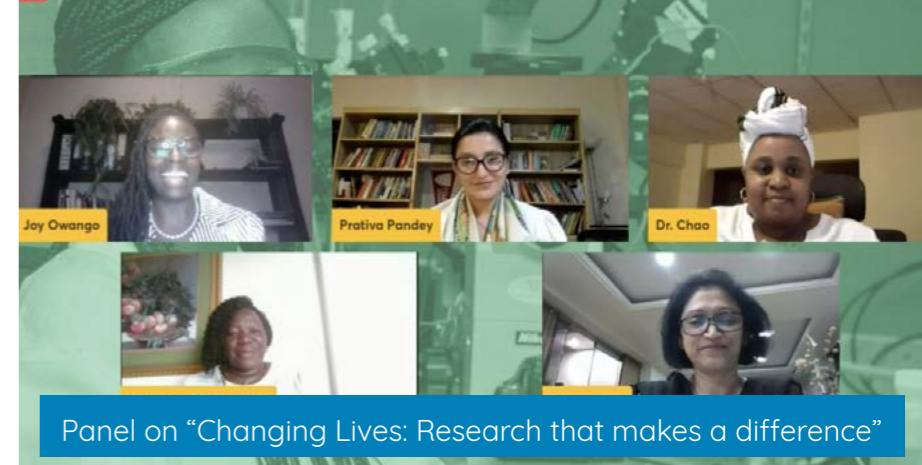


Keynote speakers included: Fabiola Giannotti, Director-General of CERN; Bina Agarwal, an internationally celebrated economist specializing in the political economy of gender, poverty and inequality; and Angela Saini, award-winning author of *Inferior: How Science Got Women Wrong* and the *New Research That's Rewriting the Story*, *Superior: The Return of Race Science*, and other books.

The conference began with a colorful opening ceremony on Monday, November 8, chaired by OWSD President Jennifer Thomson. Elena Bonetti, Italian Minister for Equal Opportunities and the Family, Maria Cristina Messa, Italian Minister for Education, University and Research, welcomed the participants and assured the organization of the Italian government's continued support for full participation of women in science and decision-making bodies. Shamila Nair-Bedouelle, Assistant Director-General for Natural Sciences at UNESCO, spoke about the impact of the COVID-19 pandemic on the participation of women in scientific research, citing the results from an [OWSD member survey](#) conducted in June 2020. Several other OWSD partners, donors, and eminent guests gave opening remarks during the ceremony, followed by OWSD Coordinator Tonya Blowers who shared highlights from OWSD

programmes (PhD Fellowships, Early Career Fellowships, Awards, and Membership), with testimonials from OWSD members who have benefitted from each of the programmes.

On Tuesday, November 9, Professor Alberto Quadrio-Curzio, renowned Italian economist and ex-president of the Accademia dei Lincei, presented a special edition of the *Economia Politica* journal, focusing on 'Pandemics, women and the Global South' which includes an editorial by Nobel laureate Amartya Sen. The special issue contains an article entitled "Resilient Women Scientists and the Covid-19 Pandemic: an OWSD Analysis," co-written by OWSD President Jennifer Thomson, OWSD Coordinator Tonya Blowers, and OWSD Communications Officer Erin Johnson. Three OWSD scientists then took centre stage to share their experiences and responses to the COVID-19 pandemic in a lively panel discussion on "Responses to COVID-19 with OSWD members".



The theme of day 3 was the importance of basic sciences for development. Four scientists (including 3 OWSD members) opened the day reflecting on whether or not the distinction between basic and applied sciences is valid, and whether or not the basic sciences are a luxury that developing countries cannot allow themselves. The panel discussion was entitled: "Looking towards 2022: International Year of Basic Sciences for Sustainable Development". This was followed by a keynote presentation by Fabiola Giannotti, Director-General of the European Organisation for Nuclear Research (CERN), on CERN's extensive and highly-respected work in both particle physics research and in education. Astrophysicist Reinabelle Reyes from the Philippines moderated a Q&A session with Giannotti after her presentation, where Giannotti defended investment in basic sciences, saying, "Fundamental research is a pillar for the development of society."

On day 4, agrarian economist Bina Agarwal gave a second keynote presentation on "Rethinking the way we farm" saying that serious ecological problems are undermining farming as an economic activity. She advocated for group farming as an environmentally responsible, economically viable farming model. Agarwal's presentation was followed by a conversation with Dorine Odongo, Head of Communications at African Women in Agricultural Research and Development (AWARD), and finally a live panel discussion with four OWSD members on "Changing Lives: Research that makes a difference". The panel held a lively discussion covering such questions as, Is it useful to distinguish between basic science and advanced science? How can scientists contribute to innovation and industry in developing countries? What are the policy changes needed to bring science to society?



On Friday, November 12, to close out the first week of the conference, all participants had the opportunity to take part in a workshop on increasing their visibility and impact as a scientist. The workshop started with a session on using podcasts for storytelling by Adelle Onyango, an internationally recognised Kenyan podcaster, who gave practical and actionable advice including how to identify a gap to fill, specific recording and editing software and equipment, and podcast distribution on various platforms. The second workshop session was led by documentary

filmmaker Nicole Leghissa, the producer of the [OWSD Visions](#) film series, who described how she helps each filmmaker in the project to conceptualize a narrative, record, and edit their films, each of which feature an OWSD scientist in a developing country. To close out the workshop, Joy Owango of the Training Centre in Communication (TCC Africa) led a discussion with Onyango, Leghissa, and OWSD Coordinator Tonya Blowers about how to tell science stories, exploring the use of autobiography, the democratisation of storytelling tools, and the curation of stories.

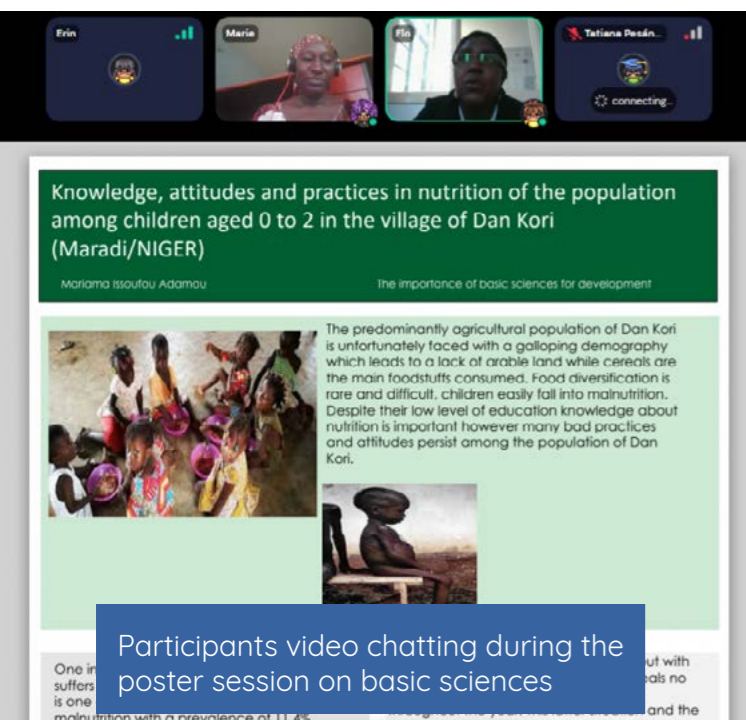


The final keynote presentation of the conference took place on Wednesday, November 17, when Angela Saini, internationally renowned author of *Inferior: How Science Got Women Wrong* and *Superior: The Return of Race Science*, among other books, described how western science, over many centuries, used the differences between the sexes to justify the belief that women were not intellectually equal to men. Scientists argued that sex differences were hard-wired and that women were different and weak and inferior, said Saini, a kind of thinking that also extended to race and only began to change from the middle of the twentieth century. A conversation on attitudes to gender differences in scientific research, between Saini and Curt Rice, Rector of the Norwegian University for Life Sciences and the Chair of Norway's Committee on Gender Balance in Research, preceded the presentation. Finally, to round out the day, a panel discussion with three OWSD members on "Gender mainstreaming in the Global South" explored the importance of diversity for excellence in science.

Throughout the conference, OWSD members presented their own research in the three themes during interactive poster sessions in the 'Lounge' area of the platform. In addition, members presented posters on their own scientific and personal responses to the COVID-19 pandemic. There were [118 posters](#) presented in total across all themes. Each participating scientist's poster exhibit took the form of a single-page poster containing a headline, a problem statement, a summary of the methodology, an illustrated description of the research, and the conclusions.

Visitors to the poster rooms in the lounge toggled from one poster to another via an avatar. They could "walk" among the various poster booths. From inside the booths, visitors were able to have a live interaction with the poster's owner who appeared in a video chat. In this way, scientists from Africa, the Arab region, Asia-Pacific, and Latin America and the Caribbean were able to meet and share ideas virtually.

The conference also included a handover of the previous OWSD Executive Board to the new members, elected in June-July 2021 (see pages [47-48](#)). Outgoing members shared how they have contributed to their regions, and continuing and new members described their visions for the 2021-2025 term. Kleinsy Bonilla, newly elected Vice President for the Latin



America and Caribbean region, emphasized her interest in connecting and activating scientific diasporas: "I believe that people like me, women scientists who migrate all over the world, have a great deal to contribute to our countries of origin; and most importantly, we stay very connected and remain intrinsic members of the communities that we have left (but often return to)."

On the last day of the conference (19 November), the in-person event at the Secretariat in Trieste, Italy brought together local supporters of women, science, and development, including the regional and city governments, universities, research institutions and associations, foundations, and local industry. Italian Minister of Education Patrizio Bianchi also connected remotely to express his ministry's support for OWSD.

The Trieste event was coordinated with in-person events hosted by OWSD National Chapters throughout the developing world and streamed online. Gatherings were held in Benin, Botswana, Cameroon, Guatemala, Jordan, Kenya, Myanmar, Morocco, Nepal, Nigeria, Palestine, Rwanda, Sri Lanka, and Tanzania. All of the National Chapter gatherings connected with the Secretariat and with each other via Zoom, and each had a chance to share their achievements, lessons learned, and plans for future activities. The day was one of sharing, networking, celebrating, and inspiring. Some chapters took the opportunity to hold their official launch events (Morocco) or work out their annual plans for the coming year (Nepal), while others organized poster presentations by early career women (Palestine), workshops on strengthening leadership skills (Botswana), or storytelling contests (Guatemala). This exhilarating global gathering exhibited the true power and scope of the OWSD membership network, and was an uplifting and fitting conclusion to the conference.



National Chapter gatherings in (clockwise from top left): Sri Lanka, Botswana, Guatemala, and Cameroon

“
These kinds of organizations and events are making the way a little bit easier [for women in science]. I want to express my gratitude to OWSD for having the space for discussions on very difficult topics.
 ”
 - Adriana Garza,
 OWSD member, Mexico

OWSD MEMBERSHIP

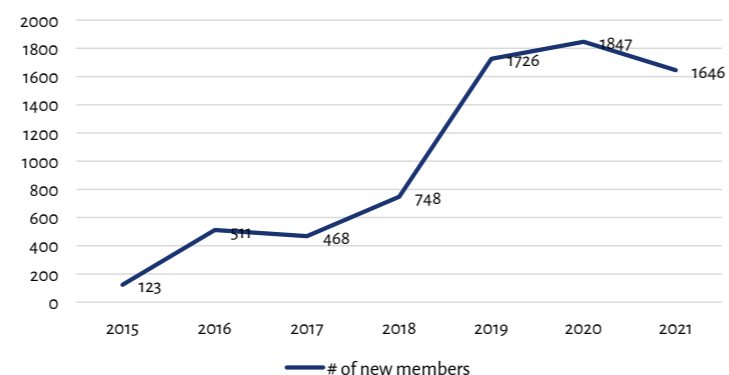
OWSD's membership is the foundation of the organization, providing a much-needed sense of community for women scientists in the developing world who often find themselves isolated; they may frequently be the only, or one of a few, women in their labs or departments, or at their own level. With more than 7800 active members as of December 2021, the member network provides an important sense of connection to other women scientists. It is a truly global community; members come from 107 countries across the Global South, and live in 136 countries worldwide. They can connect with other members online through the OWSD website or in person at international and regional OWSD conferences and workshops, to collaborate with, support, and inspire one another. They also have access to opportunities for training, travel, research visits and other funding through announcements shared to international and regional OWSD mailing lists. In many countries, members establish National Chapters, local affiliations of OWSD that organize activities and events tailored to specific needs in their countries (see pages [51-60](#)).

OWSD membership continues to grow rapidly. A membership 'reboot' in 2020 meant that inactive members were removed from the active member database, but the numbers quickly climbed back up again in 2020, from 4,833 to 6,231. In 2021 OWSD added an average of about 135 new members per month, reaching 7,877 by the end of December—a total of 1,646 new effective members over the year.

The large majority of OWSD members (86%) are full members, women scientists with a master's degree or higher in the natural sciences or social sciences. The remaining 14% are affiliate members, women from developing countries who have completed a bachelor's degree or equivalent in the sciences. OWSD also counts 301 Friends of OWSD, women and men from developed and developing countries across all disciplines who are committed to promoting the objectives of OWSD but not eligible for membership categories.

In 2021...
7,877 members of OWSD
1,646 new members

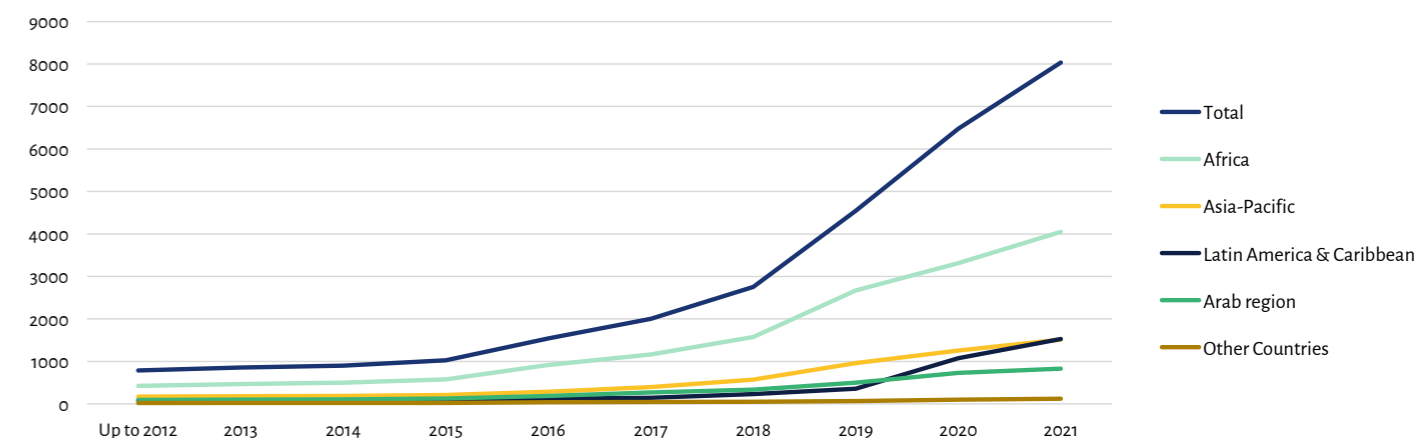
Number of new OWSD members by year



Where from? OWSD members in 2021 come from 107 countries across five continents, and are living in 136 countries across the world. By nationality, Africa is home to just over half (51%) of all OWSD members, with 4030; the Latin America and the Caribbean (LAC) region and the Asia-Pacific region follow,

with 19% of members each (1521 in LAC and 1506 in Asia-Pacific); this is the first year that membership in the LAC region has surpassed that in the Asia-Pacific region. LAC also continued to have the highest rate of growth of any region, with membership increasing by 44% from 2020. The region's leadership in the National Chapters and in the OWSD Executive Board have made concerted efforts to recruit and to unify OWSD members and to support women scientists in LAC countries to establish new National Chapters in countries where none existed. They also have assisted in recent years in translating information about OWSD membership as well as fellowships and other opportunities into Spanish, facilitating the membership enrollment process.

Growth in OWSD membership by region, 2012-2021*



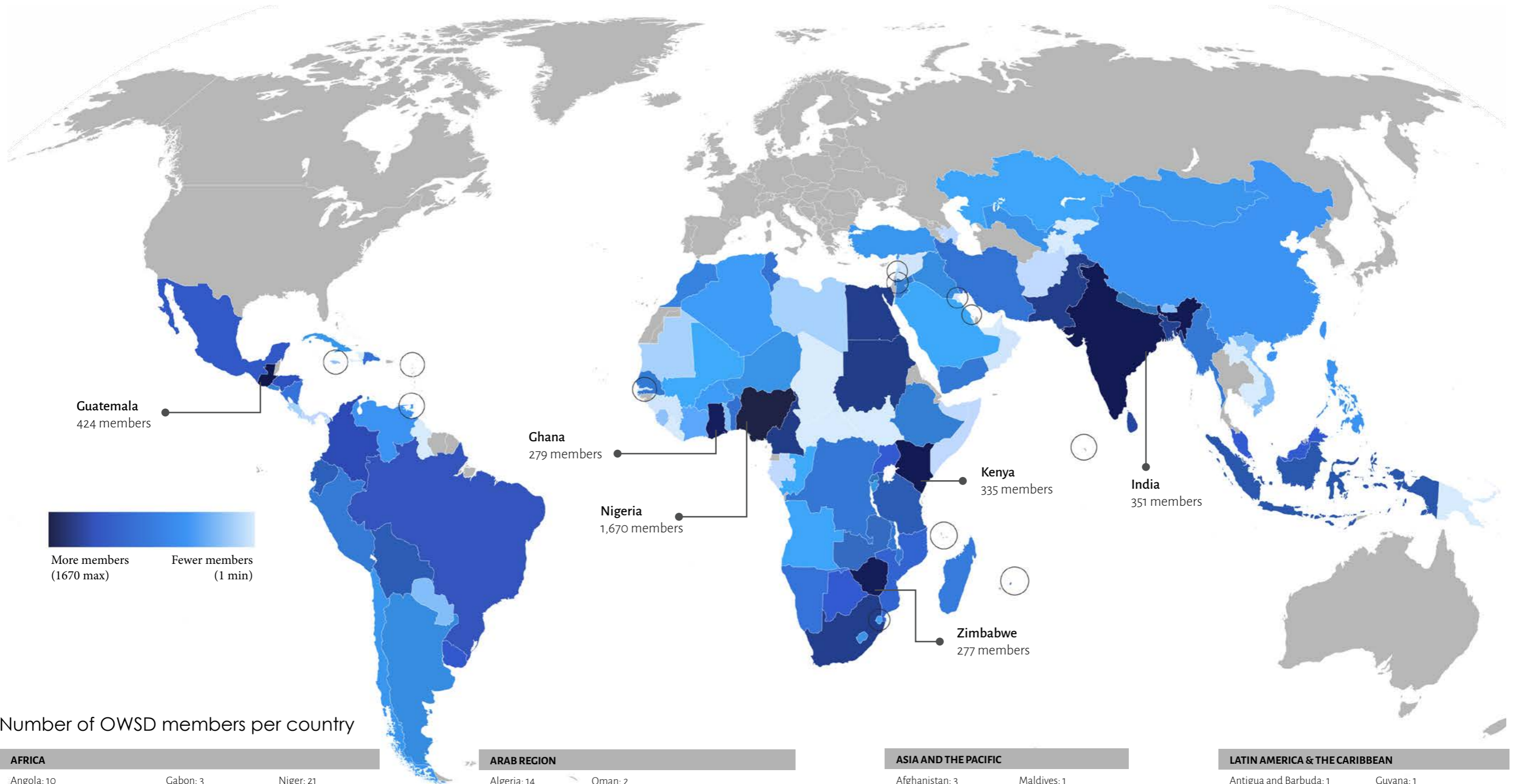
*Includes Friends of OWSD

Nigeria has far away the most OWSD members of any country—with 1670 members, 21% of the total. Guatemala, which in 2019 had only 22 members, has grown rapidly and in 2021 had 424 members. India follows with 351 members, then Kenya (335) and Ghana (279). Zimbabwe, Sudan, Egypt, Pakistan, and South Africa make up the rest of the top 10 countries for membership. Least Developed Countries (LDCs) constitute 17% of the membership, with 1375 members.



OWSD members in Guatemala City gather for the 6th OWSD General Assembly and International Conference, November 2021

OWSD Members by Nationality, 2021



Number of OWSD members per country

AFRICA			ARAB REGION		ASIA AND THE PACIFIC		LATIN AMERICA & THE CARIBBEAN	
Angola: 10	Gabon: 3	Niger: 21	Algeria: 14	Oman: 2	Afghanistan: 3	Maldives: 1	Antigua and Barbuda: 1	Guyana: 1
Benin: 69	The Gambia: 3	Nigeria: 1670	Bahrain: 22	Palestine (West Bank and Gaza Strip): 107	Azerbaijan: 3	Mongolia: 17	Argentina: 25	Haiti: 1
Botswana: 75	Ghana: 279	Rwanda: 96	Egypt: 243	Saudi Arabia: 9	Bangladesh: 210	Myanmar: 38	Bolivia: 151	Honduras: 95
Burkina Faso: 14	Guinea: 2	Senegal: 41	Iraq: 25	Sudan: 258	Bhutan: 6	Nepal: 105	Brazil: 127	Jamaica: 5
Burundi: 22	Kenya: 335	Sierra Leone: 5	Jordan: 33	Syria: 2	Cambodia: 1	Pakistan: 241	Chile: 17	Mexico: 91
Cameroon: 209	Lesotho: 21	Somalia: 3	Kuwait: 2	Tunisia: 32	China: 15	Papua New Guinea: 1	Colombia: 141	Nicaragua: 28
Central African Rep.: 1	Liberia: 1	South Africa: 219	Lebanon: 4	United Arab Emirates: 1	India: 351	Philippines: 16	Costa Rica: 4	Panama: 3
Chad: 1	Madagascar: 27	South Sudan: 1	Libya: 4	Yemen: 38	Indonesia: 157	Sri Lanka: 158	Cuba: 18	Paraguay: 6
Comoros: 1	Malawi: 55	Tanzania: 151	Morocco: 26		Iran, Isl. Rep.: 52	Tajikistan: 1	Dominican Republic: 28	Peru: 59
Congo, Dem. Rep.: 31	Mali: 8	Togo: 6			Kazakhstan: 10	Türkiye: 17	Ecuador: 112	Trinidad and Tobago: 17
Congo, Rep.: 8	Mauritania: 4	Uganda: 75			Kyrgyzstan: 1	Uzbekistan: 20	El Salvador: 63	Uruguay: 83
Côte d'Ivoire: 7	Mauritius: 45	Zambia: 65			Lao PDR: 1	Vietnam: 6	Guatemala: 424	Venezuela: 15
eSwatini: 10	Mozambique: 71	Zimbabwe: 277			Malaysia: 75			
Ethiopia: 60	Namibia: 28							

OWSD gained members in six new countries in 2021: 21 new members in Niger, and one member each in Cambodia, Chad, Comoros, Haiti, and South Sudan. The largest numbers of total new members came from Nigeria (287 new members), Colombia (103), Ecuador (76), Guatemala (73), and Kenya (63); however, the biggest gains relative to their prior membership numbers were in Nicaragua (an increase of 460%—from 5 to 28 members), Colombia (271%—from 38 to 141), Bahrain (214%—7 to 22), Ecuador (211%—36 to 112), and Paraguay (200%—from 2 to 6).

25 countries with largest increase in membership - by no. of members



25 countries with largest increase in membership - by rate of increase



In which STEM subjects? OWSD membership is grouped into general categories of research. The most popular is biological systems and organisms (17%), then medical and health sciences and agricultural sciences (each with 14%), chemical sciences and engineering sciences (each with 10%). The share of members in fields where women have historically been underrepresented (engineering, mathematics, physics, and computing and information technology) grew from 20% in 2018 and 21% in 2019 to 24% in 2020 and 2021.

OWSD members by discipline

Biological systems and organisms	1341
Medical and health sciences	1118
Agricultural sciences	1069
Chemical sciences	819
Engineering sciences	804
Social and economic sciences	582
Physics	431
Structural, cell, and molecular biology	413
Computing and information technology	352
Mathematical sciences	326
Astronomy, space, and earth sciences	297
Other	329



OWSD members in Tanzania at their National Chapter's local gathering for the OWSD General Assembly, November 19, 2021.

EXECUTIVE BOARD

OWSD Executive Board members provide the strategic leadership for the organization and are regional focal points for the National Chapters. Board members represent OWSD in international, regional and local frameworks and work to increase the visibility and representation of OWSD at these levels.

Executive Board elections have historically been held in-person during the OWSD General Assemblies. For the first time in 2021, both the General Assembly and the elections were held entirely online, allowing for a more inclusive voting process. A Call for Applications was opened for candidates from March 15-April 7, after which the OWSD Secretariat and the Nominations Committee screened and evaluated all eligible applications. Shortlisted candidates were informed in early May and asked to prepare a short video presenting a vision statement.

Elections began on June 4, when all shortlisted candidates were announced to members, and their vision statements, biographies and CVs made available on the OWSD website. Jennifer Thomson (South Africa), OWSD President from 2016-2021, was uncontested for a second term; members had one week to raise any objections to her candidature before she was confirmed as the 2021-2025 President on June 14. Elections were then opened for the four regional Vice Presidents (one each for Africa, the Arab region, Asia-Pacific, and Latin America and the Caribbean). All OWSD full members had one week to vote for the Vice Presidents of the regions linked to their declared nationalities. Two of these positions had only one candidate each, and the results were uncontested. Atya Kapley (India) was re-elected OWSD Vice President for the Asia-Pacific Region, and Huda Basaleem (Yemen) was re-elected OWSD Vice President for the Arab Region. In Africa, 1,010 out of 3,073 OWSD active full members cast their votes, re-electing Olubukola Oluranti Babalola (Nigeria) as OWSD Vice President for Africa. In Latin America and the Caribbean, 550 out of 1,086 OWSD active full members cast their vote, electing Kleinsy Bonilla (Guatemala) as the new OWSD Vice President for Latin America and the Caribbean. Finally, elections for the four Regional Members opened on June 28. The Africa region had only one candidate, and the result was uncontested; for this reason, Fortunate Farirai (Zimbabwe) was elected Regional Member for Africa. In the Arab Region, 162 out of 717 OWSD active full members cast their vote, electing Shymaa Enany (Egypt). In the Asia Pacific region, 375 out of 1,252 OWSD active full members cast their vote, electing Hasin Anupama Azhari (Bangladesh). In Latin America and the Caribbean, 409 out of 1,086 OWSD active full members cast their vote, electing Patricia Castillo-Briceno (Ecuador).

The outgoing OWSD Executive Board met for a final time on 29-30 September 2021, with newly elected members of the board participating as observers. The 2021-2025 Executive Board held its first meeting online on 6 October 2021. As a result of this meeting, several working groups were formed to focus on strategic priorities including engaging scientific diasporas, establishing guidelines for having multiple branches within OWSD National Chapters, and increasing OWSD membership in underrepresented countries.

2021-2025 Executive Board

President



Jennifer Thomson
South Africa

Vice Presidents



Olubukola Oluranti Babalola
Nigeria
Africa region



Huda Basaleem
Yemen
Arab region



Atya Kapley
India
Asia-Pacific region



Kleinsy Bonilla
Guatemala
Latin America & Caribbean region

Regional Members



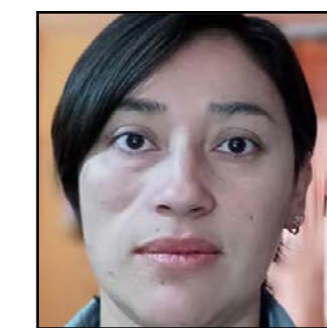
Fortunate Farirai
Zimbabwe
Africa region



Shymaa Enany
Egypt
Arab region



Hasin Anupama Azhari
Bangladesh
Asia-Pacific region



Patricia Castillo-Briceno
Ecuador
Latin America & Caribbean region

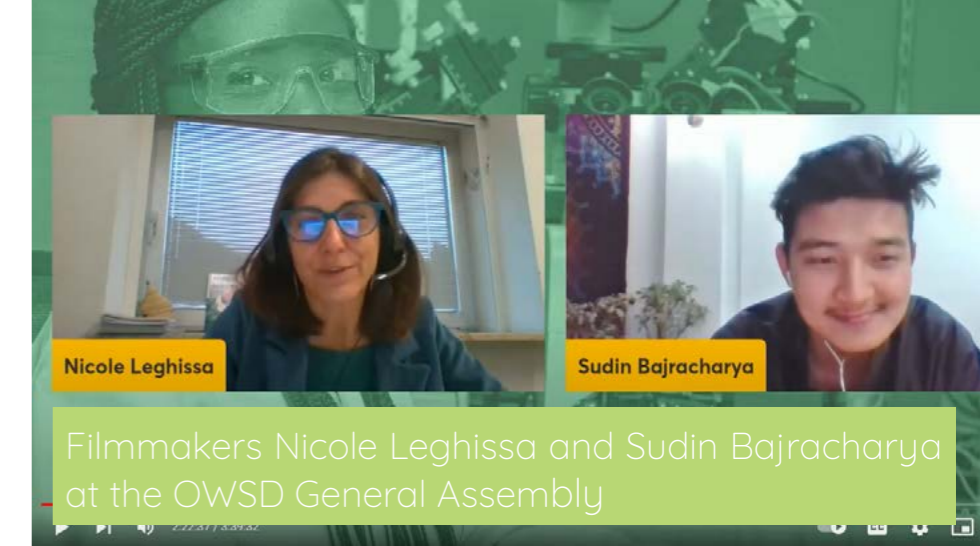
OWSD VISIONS

In the words of OWSD filmmaker Nicole Leghissa, “Every scientist has a story – but not every scientist is a storyteller.” In recent years, OWSD has been reorienting its communications strategy around strong storytelling, focusing especially on supporting women scientists in the developing world to tell their own stories.

In 2020-2021, OWSD took its first steps in this direction with the launching of the [OWSD Visions project](#). As the COVID-19 pandemic swept the globe in early 2020, Nicole Leghissa, like many people, faced the new reality of having to bring her work home—a special challenge for someone whose work relies on traveling, conducting interviews, and getting to know the subjects of her films in order to bring their stories to light. She quickly landed on an innovative solution, though:

“I started thinking about OWSD Visions when the pandemic forced us to re-think the way we work and how we create. I used to travel a lot to developing countries to film scientists’ stories. The idea of transferring my ex-

perience to local filmmakers around the world came out naturally and easily. Social networks make visual stories easy to share, mobile phones make them easy to film. But science storytelling is more complicated. I felt that I could give some guidance on it.”



“

This has been for me a very vital and emotional experience... I have this dream to create—with OWSD—a wide network of science storytellers around the world.

”

- NICOLE LEGHISSA,
Producer, OWSD Visions project

Working with the OWSD Secretariat, Nicole developed the concept of a training and transfer-of-knowledge programme in audio-visual story-telling, with the goal of empowering OWSD members and local filmmakers to produce and show audio-visual science-stories. In the pilot round of the project, four countries with particularly active OWSD National Chapters were selected for participation: Cameroon, Guatemala, Sri Lanka, and Zimbabwe. The National Chapters then reached out to local filmmakers—or in some cases, took on the project of producing the films themselves—and identified women scientists in their countries with interesting stories to profile.

The final videos produced as part of the project were released in April 2021 on OWSD’s YouTube channel: a microbiologist from Cameroon researching antimicrobial resistance of bacteria; an anthropologist from Guatemala who works with communities living in protected wilderness areas, helping them to live in harmony with conservation of natural resources; also from Guatemala, a biologist hoping to preserve native bee species; a neuroscientist from Sri Lanka who is striving to build her country’s capacity to perform international-level research, in her own field and beyond; and a physicist from Zimbabwe who is developing a biomass-burning stove that will reduce dependency on firewood and cut indoor air pollution. Their stories show how women scientists from the developing world are tackling some of the greatest challenges facing us today, often with limited resources.

A second round of the OWSD Visions project also got underway in 2021, this time focusing on OWSD Early Career fellows as protagonists of the films. Six fellows were selected from Benin, Bolivia, the Republic of Congo, Ecuador, Kenya, and Nepal. The films produced in this second round will be released in early 2022.

The OWSD Visions project was presented during the OWSD General Assembly in November 2021, during a special workshop on storytelling and science. Nicole discussed the concept and inspiration behind the project as well as the experience of working with the individual filmmakers, together with Sudin Bajracharya, whose short film profiling Early Career fellow Prativa Pandey from Nepal will be released as part of the second round of films.

Ultimately, the project will create a network of storytellers around the world and give OWSD National Chapters the necessary expertise to communicate local science stories. “Scientists’ stories in developing countries need to be told,” said Nicole, “because they matter and they can make a difference to local communities and to global sustainable development.”



OWSD NATIONAL CHAPTERS

OWSD National Chapters are groups of at least 20 OWSD members who implement OWSD's objectives at the national level. Challenges for women scientists vary largely from country to country, and so solutions must be developed with the local context in mind. National Chapters can identify the specific needs of women scientists and the barriers that prevent girls and women from embarking on STEM careers. They address these issues by organizing a range of activities, including outreach, mentoring, capacity building, and leadership training. National Chapters collaborate with the OWSD Secretariat, with the regional representatives of the OWSD Executive Board, and with other OWSD National Chapters regionally and internationally.

In 2021...
44 active OWSD National Chapters
9 new National Chapters

Growth of the National Chapters has accelerated rapidly in recent years. The first currently active OWSD National Chapter was established in Yemen in 2003, followed by India in 2006, Egypt in 2008, Bangladesh, China and South Africa in 2009, Nigeria (the largest chapter) in 2010, and Sudan in 2017. The spread of National Chapters really started to take off, however, in 2018, when 8 National Chapters were launched to coincide with the celebration of OWSD's 25th anniversary, in Ghana, Indonesia, Kenya, Mauritius, Myanmar, Rwanda, Sri Lanka, and Zimbabwe. Eleven more chapters followed in 2019: Botswana, Cameroon, Jordan, Malaysia, Namibia, Pakistan, Peru, Tanzania, Republic of Türkiye, Uruguay, and Zambia. Despite the onset

of the COVID-19 pandemic, 7 more National Chapters launched in 2020, in Brazil, Guatemala, Honduras, Malawi, Mozambique, Nepal, Palestine, and Senegal. That year was the beginning of a big push to recruit members and consolidate National Chapters in Latin America and the Caribbean, orchestrated largely by the Guatemala National Chapter. This push continued in 2021, with the establishment of National Chapters in Bolivia, Colombia, Ecuador, El Salvador, and Mexico, as well as in Benin, Central Asia, Morocco, and Uganda.



Members of the new OWSD Morocco National Chapter meet online.



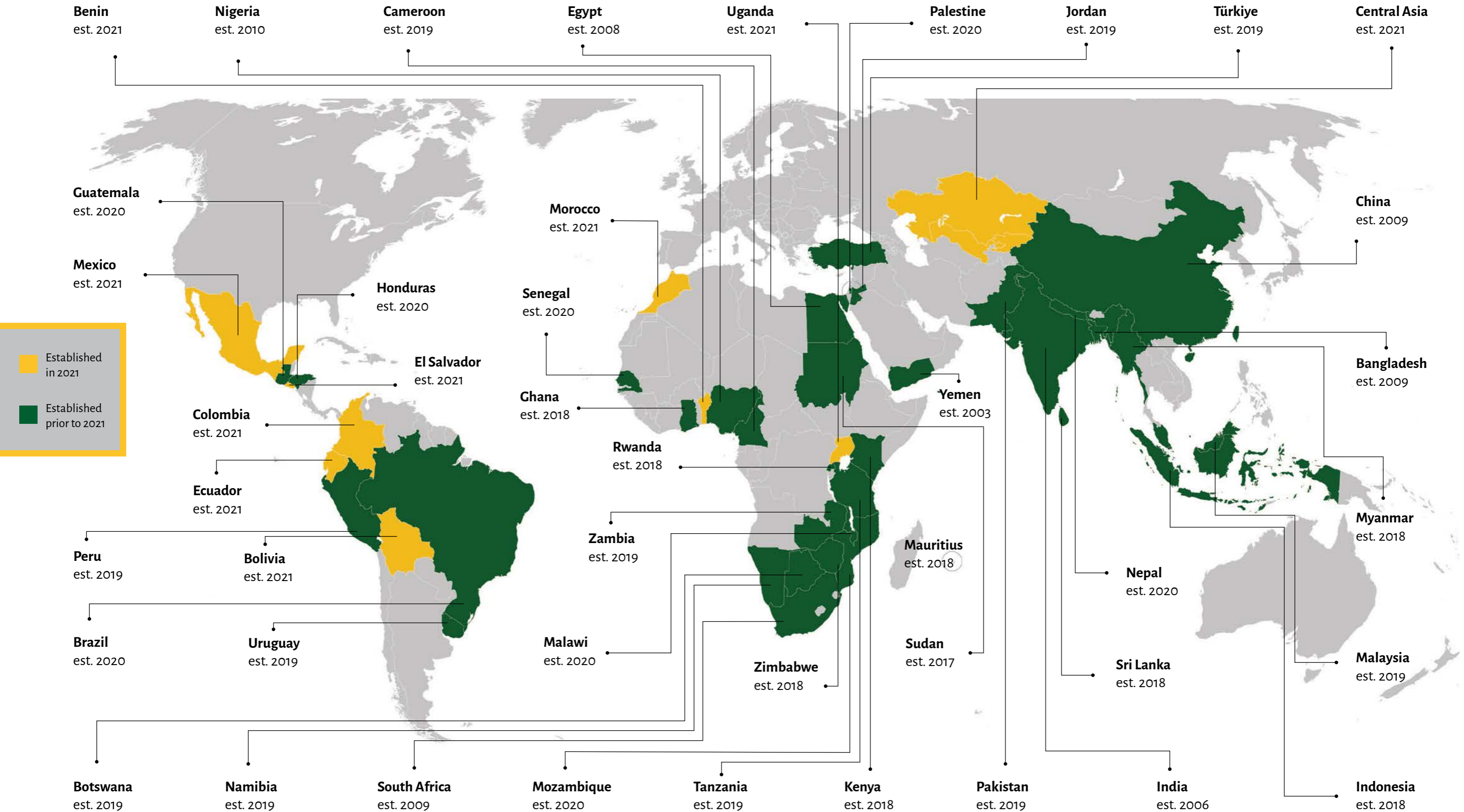
Members of the Benin National Chapter, established in July 2021, gather for the OWSD 6th General Assembly & International Conference in November.

NATIONAL CHAPTER ACTIVITIES

OWSD National Chapters continue to be prolific, creative and resourceful in organizing events and activities for their members. The COVID-19 pandemic sparked many innovations in online activities (webinars, scientific talks with participation enabled over WhatsApp, virtual meetings and conferences). In 2021, many chapters continued these activities that had proven to be so successful, while also resuming some in-person events. Indeed, 14 chapters held in-person gatherings for the 6th OWSD General Assembly and International Conference (see pages [37-40](#)).

As National Chapters set their own priorities depending on needs they identify at the local level, the focus of activities varies widely from chapter to chapter. Some are primarily oriented towards outreach, visiting schools and creating pamphlets, videos and other materials to educate girls and young women about STEM careers; other chapters are concentrated on raising the visibility of women scientists in their countries, on promoting collaborations between women scientists, or on supporting women scientists' development through mentorship and training. In total, OWSD National Chapters conducted a reported 311 activities in 2021, which included: 20 webinars and 4 webinar series; 56 celebratory events, chapter launches or assemblies; 13 workshops; 6 country inventories of female scientists; 17 WhatsApp Talks; 46 lectures; 7 releases or publications of articles; and 5 art competitions or similar activities. Some of their specific activities can be found on pages [55-58](#).

OWSD National Chapters



The OWSD National Chapters held more activities than ever in 2021, from seminars and lectures to rallies and conferences, to awards and art competitions. Many chapters also formed collaborations to organize regional activities, as in the case of the joint article on women scientists' participation in communities published by several Central American chapters, or the webinar on gaps and challenges for women scientists organized by the Malaysia and Sri Lanka National Chapters. Here we highlight a few of the dozens of activities executed by the National Chapters in 2021.

BANGLADESH

OWSD Bangladesh National Chapter members celebrated the International Day of Women and Girls in Science with rallies at Bangladesh University of Health Sciences (BUHS) and the Bangladesh Rice Research Institute, attended by deans of several faculties, female and male faculty members, and university students. They additionally organized two webinars with BUHS, as well as an essay writing competition for women university students and a series of seminars with four different universities.



CENTRAL AMERICA

In July, seven OWSD members from Central America published the article: "Participation in Communities of Women Scientists in Central America: Implications from the Science Diplomacy Perspective", a study of the experiences, dynamics, motivations and barriers for Central American women scientists' participation in groups, associations, communities and networks in four countries: Guatemala, El Salvador, Honduras, and Panama.

COLOMBIA

The OWSD Colombia National Chapter participated in a campaign led by Parent in Science Colombia to increase the number and visibility of Wikipedia entries for Colombian women scientists. The campaign included trainings in how to become an editor on Wikipedia, where only 19% of pages in English correspond to biographies of women, and 22% in Spanish.

GUATEMALA

The OWSD Guatemala National Chapter, in cooperation with the Guatemalan Academy of Medical, Physical and Natural Sciences, held a nationwide contest for drawings and videos responding to the theme of 'What is a Guatemalan scientist like?,' in celebration of the International Day of Women and Girls in Science.

KENYA

The OWSD Kenya National Chapter organized a mentorship activity at Ngara Girls High School in Nairobi on June 23, in partnership with the Ngara Girls Alumnae Association. OWSD members at various stages of their careers, including older members as well as scholars currently pursuing their master's degrees, took part in the visit, where the younger members were presented as role models whom the students might more easily identify with.



MALAYSIA AND SRI LANKA

The OWSD Malaysia and OWSD Sri Lanka National Chapters collaborated to organize a webinar on November 25 on 'Gaps, Challenges & the Way Forward in Research With The New Norms'. The webinar included video presentations from both National Chapters, and speakers including Shamala Devi Sekaran, Deputy Dean of the Faculty of Medicine & Health Sciences at UCSI University, Malaysia, and Shiroma Hadunnetti, Former Director of the Institute of Biochemistry, Molecular Biology and Biotechnology at the University of Colombo, Sri Lanka.

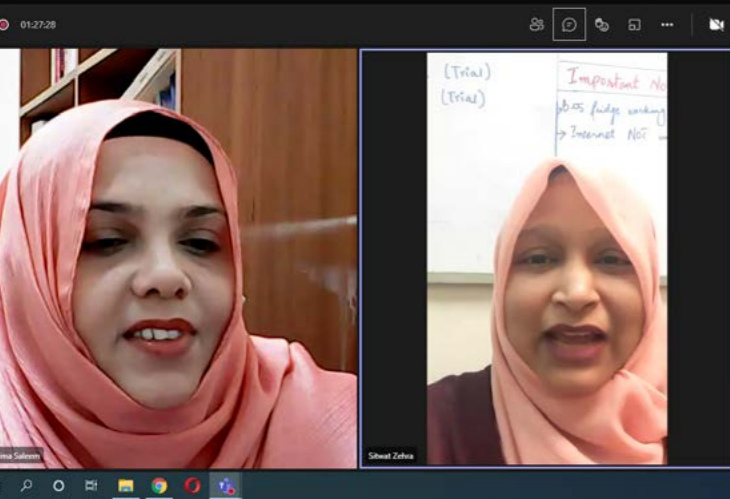
NEPAL

The OWSD Nepal National Chapter celebrated World Water Day on March 22, together with the Nepal Fisheries Society (NEFIS) and ESORCE, with a panel of presentations on various aspects of water health and management, including dams and the threat to fish diversity in Nepal, urban wastewater management, and water and sanitation in connection to climate change.

NIGERIA

The OWSD Nigeria National Chapter held its 5th Biennial Conference from June 14-17 at Michael Okpara University of Agriculture in Umudike, hosted by the Umudike branch. The conference, with the theme of 'Making research count in national development: the role of women scientists', welcomed 244 members from 14 states in Nigeria. Conference participants agreed on several resolutions, including enabling policy frameworks for women scientists, encouraging inclusive action by all branches within the national chapter, and establishing formal and informal mentorship programmes for women scientists. Chair Ibiyinka Fuwape also hailed what she called the strength of the Nigeria chapter, the diversity and spread of its members.





PAKISTAN

The OWSD Pakistan National Chapter launched a virtual lecture series to share the journeys of young female researchers, entitled “Challenges for Young Women Embarking on Careers in Science.” The first speaker was Faria Fatima, who spoke about overcoming hurdles in the research and publication process, followed by Shagufta Sahar, who discussed the issues and current situation of food security in Pakistan.

PALESTINE

The OWSD Palestine National Chapter held several meetings of its Communication and Media Committee to develop a strategy to support and develop Palestinian women’s capabilities in various fields. Among the outcomes of their meetings were a brochure to introduce the Palestine National Chapter, an agreement to create introductory videos for members of the chapter for recruitment of more members, and a plan for a series of meetings with students studying on scholarships outside Palestine.



RWANDA

The OWSD Rwanda National Chapter in collaboration with the Rwanda National Council for Science and Technology, Rwanda Association for Women in Science and Engineering, Next Einstein Forum, and Ministry of Gender and Family Promotion presented four awards for Rwandan women and girls live on Rwandan national TV, in celebration of the International Day of Women and Girls in Science, February 11.

ZAMBIA

The OWSD Zambia National Chapter launched a series of Thursday ‘STEM Talks’ webinars to discuss various topics from academic writing to poultry farming and general life skills. Topics included in the webinars included ‘Promotion of gender equality in the use of intellectual property,’ ‘Oral Presentation Skills,’ ‘Gender in Agriculture: Value Chain Mapping,’ and ‘Plant breeding and Technology.’



OWSD Rwanda National Chapter members greet each other at their November 2021 gathering for the OWSD 6th General Assembly and International Conference

SPOTLIGHT ON: OWSD CAMEROON NATIONAL CHAPTER



Since its establishment in April 2019, the Cameroon National Chapter of OWSD has been one of its most active. The chapter held an official 2-day launch ceremony in December 2019 at the University of Yaoundé I, its host institute, which was presided over by Owono Luc Calvin, Secretary General of the university, as well as by OWSD President Jennifer Thomson. The launch introduced the new chapter to women scientists in Cameroon and included presentations about OWSD opportunities, keynote talks, a poster session, a workshop, exhibitions, a science and technology competition for secondary school students, unveiling of the National Chapter logo, award of prizes, inauguration of the OWSD Cameroon office provided by the university, a banquet, and networking and social opportunities.

Since then, the Cameroon National Chapter has organized dozens of activities in four main areas: encouraging networking and collaboration among women scientists in the country; supporting women scientists' career development; STEM outreach to girls and young women; and providing support for national environmental and social priorities. Included among the latter is the chapter's contribution to the establishment and management of nurseries for reforestation at the perimeter of the Mokolo Water Compensating Reservoir following Boko Haram conflict in the far north of Cameroon, from 2021-2022, as well as assisting internally displaced women, children, and host communities affected by socio-political conflict and the COVID-19 pandemic in the country's northwestern and southwestern regions.

Helping members to acquire useful skills for scientific careers has been a particular focus of the National Chapter. In April 2021, they organized an online workshop on writing a research proposal, which was attended by 90 participants. Also available to mem-

bers in 2021 were two in-person trainings in writing strong research projects and in establishing scientific collaborations, again with 90 participants.

The chapter is also very invested in engaging and supporting future generations of women in STEM. In April and May 2021, members in the northwestern region of Cameroon visited secondary schools to educate students about different opportunities for careers in STEM. In July, members at University of Ngaoundere organized a workshop for women postgraduate students and lecturers at the School of Chemical Engineering and Mineral Industries, on effective networking during conferences and approaching prospective supervisors for collaborations. They have also established a mentoring programme for young women sci-

entists that aims at educating highschool girls in STEM fields, in order to encourage them to pursue their studies in STEM. "Advocating for STEM at the level of highschools and universities is a priority to our chapter because a girl should have equal chance as a boy to choose her vocation in STEM fields," says Vice Chair Linda Nyamen. "There is that misconception that science is a myth, is difficult and is meant for boys; there is also a leaking pipeline for female scientists at postgraduate levels at the university. This is more pronounced in some regions of the country. The National Chapter through our activities such as visits to schools, workshops and mentoring programmes is addressing these issues."

The Cameroon National Chapter was one of the 14 chapters to participate with a live gathering in the 6th OWSD General Assembly and International Conference in November 2021. A total of 40 members and students—including 5 interested male students—followed the event live at the University of Yaoundé I. The event also included a workshop on maintaining career-life balance as a woman. "The members present shared their experiences for over two hours," shared Elvira Hortense Biye, the chapter's Chair. "It was an exciting session."



OWSD Cameroon members at their November 2021 gathering for the 6th OWSD General Assembly and International Conference



The official launch of the OWSD Cameroon National Chapter, December 2019

OWSD AWARDS

Launched in 2012, the [OWSD-Elsevier Foundation Awards for Early Career Women Scientists](#) reward and encourage women working and living in developing countries who are in the early stages of their scientific careers, having often overcome great challenges to achieve research excellence. Awardees must have made a demonstrable impact on the research environment, both at a regional and international level, and be within ten years of receiving their PhD.

The awards are given to five scientists each year, one from each of the four OWSD regions plus one additional candidate from any of these regions. Since 2013, the eligible scientific disciplines have rotated on a three-year cycle between the biological sciences, engineering and technology, and the physical sciences. In 2021, it was announced that this would change starting from the 2022 awards to a 5-year rotation aligned with specific UN Sustainable Development Goals (SDGs):

- 2022 awards: Climate action and the environment (SDG13, SDG14 or SDG15)
- 2023 Awards: Food security, agricultural productivity and sustainable food production (SDG2)
- 2024 Awards: Water, sanitation and hygiene (SDG6)
- 2025 Awards: Inclusive health (SDG3)
- 2026 Awards: Sustainable, affordable and reliable energy (SDG7)

Each award winner receives a cash prize of USD 5,000. The winners are also sponsored to attend the annual meeting of the American Association for the Advancement of Science (AAAS) in the USA, where they are presented with their awards at a special networking ceremony and have the possibility to attend workshops and sessions at the AAAS meeting, visit local laboratories and institutions, and attend a celebratory dinner organized by the Elsevier Foundation. In 2021, however, both the AAAS conference and the awards ceremony were held virtually for the first time, owing to the COVID-19 pandemic.

The awards have an important impact on the winners' visibility and recognition. Previous winners say the awards have made them more confident in their careers and have opened new doors for them, including increased collaborations and publications, opportunities to participate as expert reviewers or committee

“
Not only has this award had a pivotal role in my career development, but it has also made me more sensitive to many contextual issues and enhanced my consideration of social accountability issues.
 ”

- HUDA BASALEEM,
 2013 OWSD-Elsevier Foundation Award winner, Yemen



2020 OWSD-EF Award winners on stage at the AAAS conference in February 2020.

members, and invitations to speak at conferences and seminars. The awardees are also inspiring role models for young women in science.

2021 AWARD WINNERS

The 2021 OWSD-Elsevier Foundation Awards were given in the physical sciences. The five winners were: María Eugenia Cabrera Catalán (Guatemala); Khongorzul Dorjgotov (Mongolia); Ghada Dushaq (Palestine); Imalka Munaweera (Sri Lanka); and Marian Asantewah Nkansah (Ghana). Read more about them on pages [63-64](#).

The awardees were virtually presented their awards during the Minority and Women Scientists and Engineers Tête-à-Tête session at the AAAS meeting on February 9. The ceremony took place from 1-3 pm EST, followed by a networking session where participants were able to engage with the awardees.

As in previous years, private donors Martha Darling and Gil Omenn also generously awarded each awardee an additional USD 2,500 on top of their USD 5,000 from the Elsevier Foundation.

The awardees received a large amount of media coverage and further recognition following the announcement, appearing in more than 30 international and national media outlets, including articles on the UN News website, in *The Times Higher Education*, and in *Asian Scientist* magazine. Winner María Eugenia Cabrera Catalán from Guatemala was named one of the ‘100 Most Powerful Women in Central America of 2021’ by *Forbes*, and Ghada Dushaq from Palestine was named one of the 2021 L’Oréal-UNESCO For Women in Science innovators under 35, for the Middle East and MENA region. Dushaq additionally was invited for a research visit at the Cambridge Graphene Center at the University of Cambridge, UK, where she will be able to intensify her focus on high speed communication for data centers.



The 2021 OWSD-Elsevier Foundation Award winners during the virtual awards ceremony, February 2021.

“
This award motivates me to conduct impactful research that will bring enormous benefits and solutions to the burning issues in the world that we live in. It will also motivate all woman scientists who need support to engage in quality research, and the whole world will benefit as a result of their achievements.
 ”

- KHONGORZUL DORJGOTOV,
 2021 OWSD-EF Award winner, Mongolia

2021 OWSD-ELSEVIER FOUNDATION AWARDEES



**MARÍA EUGENIA
CABRERA CATALÁN**

Guatemala (Latin America & Caribbean)

Junior Professor,
School of Physical Sciences and
Mathematics
University of San Carlos of Guatemala

PARTICLE PHYSICS:

For her work on dark matter, the most abundant component of matter in our universe important to developing a more fundamental theory of nature. She studies interactions between newly discovered particles such as the Higgs boson; understanding these dynamics can help us to understand the interactions that could be expected between weakly coupled dark matter particles in particle collider experiments, or seen by underground detectors that attempt to measure how dark matter interacts with the Earth.



KHONGORZUL DORJGOTOV

Mongolia (Asia-Pacific)

Senior Lecturer,
Department of Applied Mathematics
National University of Mongolia

FINANCIAL MATHEMATICS AND MATHEMATICAL MODELING

For her work on fractional differential equations (FDEs), an emerging field in applied and theoretical mathematics with many applications in a variety of fields in science and engineering. FDEs have been recognized as an excellent tool for describing complex systems and processes in many applied sciences including physics, chemistry, biology and economics. The study of these types of equations is becoming increasingly popular as they can more accurately model a given physical system or process than conventional differential equations.



GHADA DUSHAQ

Palestine (Arab region)

Postdoctoral researcher,
Photonics Research Lab
New York University Abu Dhabi

APPLIED PHYSICS AND NANOTECHNOLOGY:

For her work in applied physics investigating new and innovative materials, structures, and process technologies in order to improve the performance of high-speed optoelectronics, nanoelectronics, and photonics devices. Her research on the use of silicon, germanium, III-V compound semiconductors, and other materials can improve the efficiency and address limitations of currently available technologies. She has developed a novel method for bandgap engineering using nanoindentation as a complete physical technique.



IMALKA MUNAWEERA

Sri Lanka (Asia-Pacific)

Senior Lecturer,
Department of Chemistry,
University of Sri Jayewardenepura

SYNTHETIC CHEMISTRY AND NANOCHEMISTRY:

For her work on the development of nanoparticles and nanofibre composites that can be applied in a range of different functions, from drug delivery in the pharmaceutical industry, to water filtration, to slow-release fertilizer systems in agriculture. She has made particular advances in using nanotechnology to produce environmentally-friendly and cost-effective crop fertilizers, and in developing chemoradiotherapeutic formulations and radiotherapeutic bandages for use in lung and skin cancer treatment.



MARIAN NKANSAH

Ghana (Africa)

Associate Professor,
Department of Chemistry,
Kwame Nkrumah University of
Science & Technology

ENVIRONMENTAL CHEMISTRY:

For her work identifying and characterizing the presence of inorganic and organic contaminants in water, food, soil, the atmosphere and other environmental matrices, as well as on developing strategies for environmental remediation. By preparing and analyzing samples from different environments, she can determine the levels present and effects of contaminants such as heavy metals, persistent organic pollutants (POPs) and polycyclic aromatic hydrocarbons (PAHs), which are generated by urbanization, industrial activities, artisanal activities and mining.



2021 OWSD-Elsevier Foundation awardee María Eugenia Cabrera Catalán from Guatemala delivering a lecture in particle physics.

SPOTLIGHT ON: MARIAN ASANTEWAH NKANSAH



Born to two parents working in education, and growing up as the fourth of six children in the 1980s—a time when Ghana was experiencing both economic collapse and political instability—Marian Asantewah Nkansah had to learn very young “the need to be grateful for things received, judicious use of resources and the importance of giving back to society.”

This interest in contributing positively to society, combined with her natural interest in science, led Marian to pursue a Master’s degree in environmental chemistry at the Kwame Nkrumah University of Science and Technology (KNUST), followed by a PhD in the same subject from the University of Bergen in Norway. In her research, she focuses on identifying and characterizing the presence of both inorganic and organic contaminants in water, food, soil, the atmosphere and other environmental matrices, and on developing strategies for environmental remediation.

By preparing and analyzing samples from different environments, she can determine the levels and effects of contaminants such as heavy metals, persistent organic pollutants (POPs) and polycyclic aromatic hydrocarbons (PAHs), which are generated by urbanization, industrial activities, artisanal activities and mining. She is striving to make the public aware of the risks of heavy metals, which she has found in unexpected places such as spices, lipstick, edible clay and classroom dust.

Marian considers it important to share her research findings with the public, to increase their understanding of health hazards associated with heavy metal contamination from everyday activities. She has appeared on local radio and TV and in print media as well as both in national and International scientific platforms to spread awareness of these risks. She has undertaken special training in science communication to learn how to translate complex scientific and technical subjects for a wide audience, and has participated in outreach programmes of Women in STEM Ghana, the Ghana Academy of Arts and Science, the Science Forum South Africa, and the Science and Technology for Society Forum in Japan. Always on a “continual quest for opportunities for growth and broader knowledge”, she has also undergone training in science diplomacy, and participated in the United Nations Virtual Conference on STI for SDGs among other events, where she was invited to reflect on the topic ‘Re-thinking global STI-cooperation post-COVID-19’. “I believe scientists

need to understand global politics,” she says, “in order to know how to articulate their views to inform and influence policy direction.”

In 2019, Marian became the youngest female Associate Professor at KNUST at the age of 40. “I consider it my greatest achievement,” she says. “Coming from an environment where women in the public space have to wrestle with domestic and cultural expectations and where assertiveness is sometimes misconstrued as aggressiveness, I had to learn how to form positive partnerships with colleagues in a male dominated field in order to climb the ladder. These linkages coupled with solid mentorship have been my pillars when the challenges seemed insurmountable.”

Winning the OWSD-Elsevier Foundation Award “is a huge endorsement of my scientific and professional endeavors,” she says. “It is definitely going to further increase my visibility and offer more opportunities for growth and impact in my causes, including research on environmental contamination, mentorship and outreach.”



FINANCIAL SUMMARY

OWSD is funded by three donors. Sida, the Swedish International Development Cooperation Agency, has funded the PhD programme since 1998. In 2018, Canada's International Development Research Center (IDRC) became OWSD's second major donor, with the commitment to fund the Early Career Fellowship. The Elsevier Foundation has funded the OWSD Awards programme since 2012.

Financial income and expenditure for the years 2020-2021 are reported in the tables below.* Expenditure is organized according to programme areas.

INCOME	AMOUNT (USD)
Balance brought forward from 2019	1,157,373.80
Swedish International Development Agency (Sida)	2,869,697.00
International Development Research Centre (IDRC), Canada	2,011,820.27
Elsevier Foundation, USA	144,450.00
Aspen Institute Italia	53,445.00
Contributions from OWSD members	3,170.75
Interest	96,000.00
TOTAL INCOME	6,335,956.87

EXPENDITURE	AMOUNT (USD)		
	APPROVED BUDGET	REVISED BUDGET	SPENT
(1) Increasing women's participation, leadership and influence in science, technology and innovation in low and middle income countries (PhD fellowship programme)			
1.1 Fellowships (PhD)	1,872,884.00	1,901,878.00	1,901,878.00
1.2 Travel (PhD fellows)	209,865.00	212,701.00	165,023.00
1.3 Regional workshop/General Assembly	125,885.00	137,093.00	74,402.55
1.4 Monitoring	47,015.00	57,703.00	53,575.96
1.5 Travel - Executive Board and staff	38,774.00	5,173.00	
1.6 Website/communications	44,736.00	44,736.00	44,736.00
1.7 Staff and office space	690,038.00	713,166.00	701,775.71
1.8 Additional funds received in previous year	178,070.85	178,070.85	166,301.36
Subtotal for (1)	3,207,267.85	3,250,520.85	3,107,692.58
(2) Supporting women's leadership in science, technology and innovation in scientifically and technologically-lagging countries (Early Career Fellowship programme)			
2.1 Personnel	451,155.00	451,155.00	424,434.88
2.2 Consultants	17,307.00	17,307.00	16,455.41

EXPENDITURE	AMOUNT (USD)		
	APPROVED BUDGET	REVISED BUDGET	SPENT
2.3 Evaluation	13,603.00	13,603.00	13,172.08
2.4 Research and equipment	1,083,167.00	1,083,167.00	993,735.34
2.5 International travel	14,446.00	14,446.00	2,276.16
2.6 Training	51,810.00	51,810.00	1,810.00
2.7 Other direct programme administrative costs	176,128.00	176,128.00	101,486.24
2.8 Additional funds received from IDRC in previous year	378,582.02	378,582.02	375,773.38
Subtotal for (2)	2,186,198.02	2,186,198.02	1,929,143.49
(3) Gender in Science, Innovation, Technology and Engineering (GenderInSITE)			
3.1 Steering Committee	18,680.25	18,680.25	7,914.32
3.2. Regional Focal Points	30,000.00	30,000.00	30,000.00
3.3 Workshops/activities	22,418.68	22,418.68	22,418.67
3.4 Communications	2,904.98	2,904.98	2,881.41
3.5 Travel	5,500.53	5,500.53	5,500.53
3.6 Staff costs	62,056.56	62,056.56	61,428.77
Subtotal for (3)	141,557.00	141,557.00	130,143.70
(4) OWSD-Elsevier Foundation Awards for Early Career Women Scientists in the Developing World			
4.1 Awards	79,350.75	79,350.75	79,261.74
4.2 Alumnae Programme	33,868.00	33,868.00	23,045.00
4.3 Community building	15,000.00	15,000.00	
4.4. Staff costs	20,000.00	20,000.00	19,146.96
Subtotal for (4)	148,218.75	148,218.75	121,453.70
(5) Additional core activities			
5.1 Fellowships PhD funds	567,350.00	587,350.00	500,919.90
5.2 Staff costs	120,000.00	120,000.00	108,464.81
5.3 ICTP services	89,988.00	89,988.00	89,988.00
5.4 General Assembly	45,000.00	45,000.00	
Subtotal for (5)	822,338.00	842,338.00	699,372.71
Management costs	67,939.00	69,939.00	57,457.86
TOTAL EXPENDITURE	6,573,518.62	6,638,171.62	6,045,264.04
Savings on prior years' obligations			988,661.88
Excess (shortfall) of income over expenditure			1,279,354.71

RESERVE FUND ²	AMOUNT (USD)
Amount available at the beginning of the period	200,000.00
Transfer from OWSD account	
End of service entitlements	
Reserve Fund balance end of period	200,000.00

*The budget shown also contains income and expenditure for GenderInSITE, a partner programme of OWSD that is budgeted under the OWSD programme for administrative purposes.

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.

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

OPERATIONAL STRUCTURE

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 which is elected every five years. In 2021 elections were held online for the 2021-2025 Executive Board (see pages 47-48). The first meeting of the newly elected Executive Board was held online from 29-30 September 2021 and on 6 October 2021. The outgoing 2016-2021 EB members introduced the new EB members during the opening of the OWSD 6th General Assembly and International Conference in November 2021. The OWSD Executive Board includes a President (from any of the four OWSD regions in the developing world), four Vice Presidents (one from each region), and four Regional Members (one from each region).

The Secretariat of OWSD is hosted on the campus of the Abdus Salam International Centre for Theoretical Physics (ICTP) in Trieste, Italy.

EXECUTIVE BOARD

PRESIDENT

Jennifer A. Thomson, South Africa

VICE PRESIDENTS

Huda Basaleem, Yemen (Arab region)

Kleinsy Bonilla, Guatemala (Latin America and the Caribbean region)

Atya Kapley, India (Asia-Pacific region)

Olubukola Oluranti Babalola, Nigeria (Africa region)

REGIONAL MEMBERS

Hasin Anupama Azhari, Bangladesh (Asia-Pacific region)

Patricia Castillo-Briceno, Ecuador (Latin America and the Caribbean region)

Shymaa Enany, Egypt (Arab region)

Fortunate Farirai, Zimbabwe (Africa region)

SECRETARIAT

Tonya Blowers - **Coordinator**

Evgenia Markvardt - **Programme Manager**

Alexandra Cussianovich - **Membership & Awards**

Lucia Fanicchi - **External Relations**

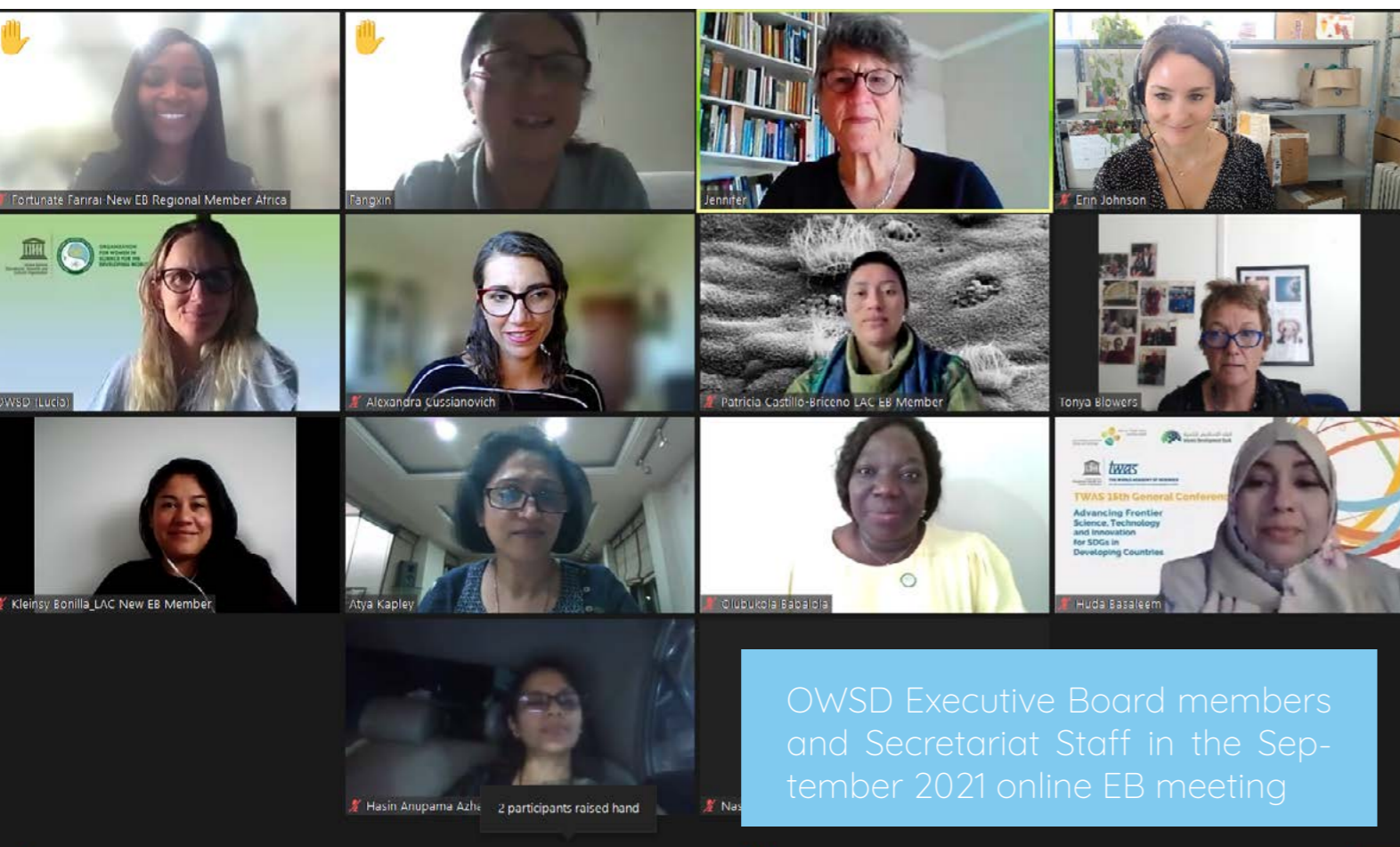
Erin Johnson - **Communications**

Tanja Bole - **Fellowships**

Erika Hrvatic - **Fellowships**

Marina Juricev - **Fellowships**

Zabeeh Ullah Sahil - **Fellowships**



ICTP campus, Trieste, Italy

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Swedish International Development Cooperation Agency (Sida)

PhD fellowship programme and Secretariat support



International Development Research Centre (IDRC) - Canada

Early Career fellowship programme and Secretariat support



The Elsevier Foundation

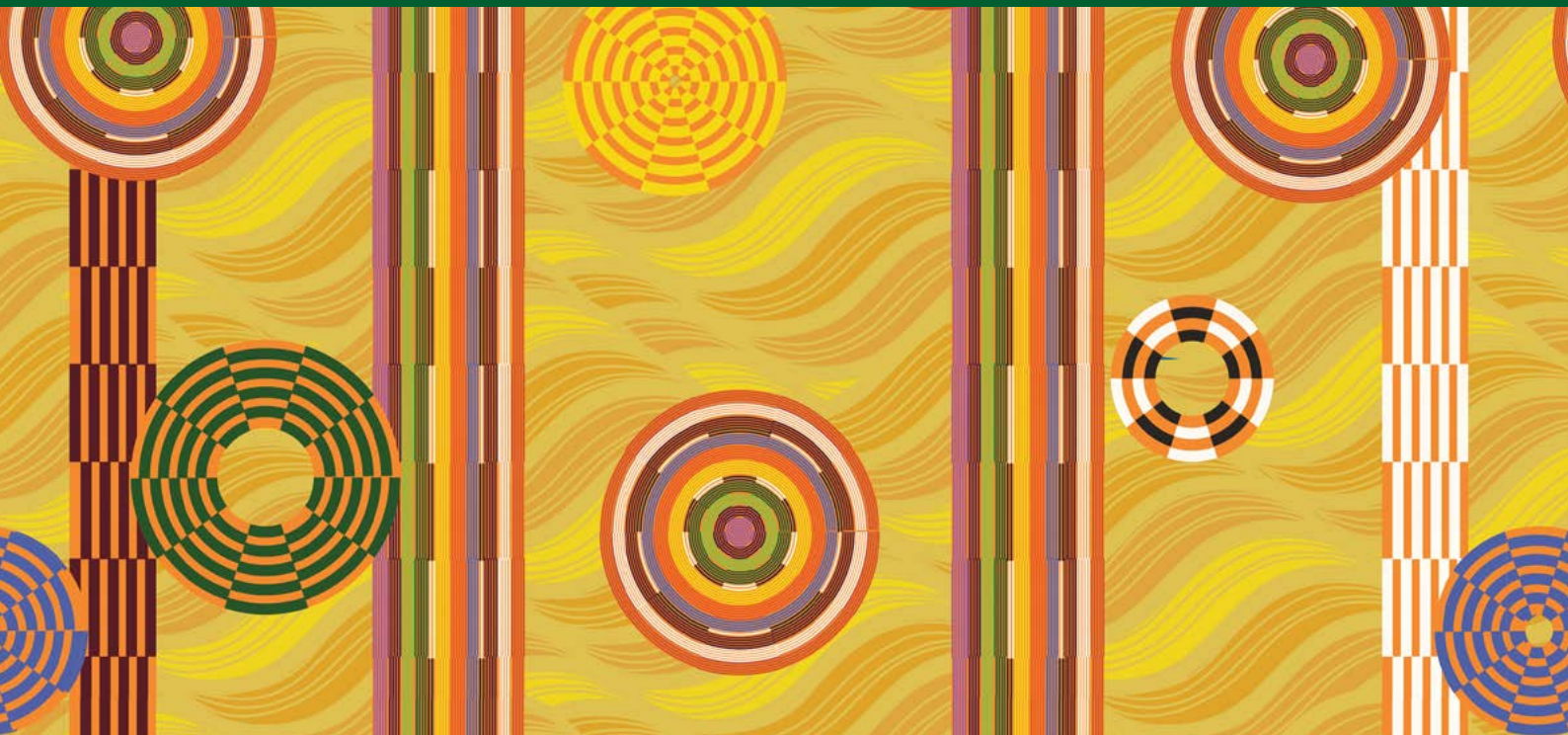
Awards programme



OWSD additionally thanks the following private donors who contributed to our programmes in 2021:

**Sirene Abou-Chakra and Bridgette and Sloane Groh
+ three anonymous donors**

This report was written and designed by Erin Johnson, OWSD Communications Administrator, with support from Tonya Blowers, Tanja Bole, Alexandra Cussianovich, Lucia Fanicchi, Erika Hrvatic, Marina Juricev, and Sahil Zabeeh Ullah.



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