



Reimagining a STEM Research Culture: Lessons  
Learnt from 20 years of Evolution for Inclusive  
Representation in Science and Engineering

# Final Project Report

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## 1. Background

It is still the case that women, people with disabilities and those from ethnic-minorities or socially-disadvantaged groups are consistently underrepresented, particularly at senior levels, in Science, Technology, Engineering and Mathematics (STEM).

Although diversity and inclusion issues also persist in other sectors, this underrepresentation in STEM is problematic for many reasons. Different studies show that diverse teams lead to greater innovations. Diversity influences the nature and process of knowledge production and the ways in which Higher Education Institutions and industry can shape discourses and practices. It is recognised, for example, that the historical absence of women in STEM research – as leaders, participants, subjects, and beneficiaries – has resulted in science having more evidence for men than women, and in the 'male' being accepted as the norm in study design, and in the application and communication of research.

In some STEM disciplines, the underrepresentation is mainly governed by individuals choosing not to study the subjects that lead to STEM careers. In others, women, people with disabilities and people of colour may be well represented at early stages of study and career, yet they fail to be retained and to progress to senior levels. We refer to the *leaky pipeline* in academia to describe the gradual loss of underrepresented groups working at each career stage following postgraduate training, from Postdoctoral to Lecturer, Senior Lecturer and Professorial roles, with Higher Education institutions losing a substantial proportion of the pool of talented staff available to them.

Underrepresented groups' participation in STEM, especially in engineering, is highly variable across culture. For example, in Europe only 13% of leaders of higher education institutions are women (League of European Research Universities 2012, 3). In Africa, female scientists rarely work as research directors or Principal Investigators, instead being clustered at lecturer or assistant researcher level (World Health Organization 2013). Women in the UK experience an over representation on insecure contracts and are paid on average 12% less than their counterparts in the same roles (Perfect 2011). In Scotland, recruitment and retention of women in engineering have worsened, rather than improved in the last 10 years (Equate Scotland 2020). Stereotyping often leads to women being assigned more responsibility for co-ordination, teaching/training and mentorship. Undertaking these 'non-technical' roles negatively affects women's professional status, research output and participation in international networks (Lerchenmueller and Sorenson 2018, 1008; Okwach, et al 2006, 175; Larivière et al. 2013).

Progress has been made in the last two decades to inspire people from all backgrounds to follow careers linked to research and innovation in STEM fields. Creating interest in STEM among pupils and undergraduate students is as important as achieving and retaining diversity in STEM at later stages, from postgraduate study and beyond. **We strongly believe that changing the gender and social balance in STEM will not happen without conscious, deliberate effort.** Therefore, this project was proposed, in collaboration between the University of Warwick (UK) and the International Network of Women Engineers and Scientists (INWES), to take a few more steps towards a culture that supports diversity and inclusion in STEM and to get closer to achieving the significant benefits that such a culture would bring to individuals and to the wider society.

## 2. The project

The project was funded by the University of Warwick (PI Prof Georgia Kremmyda, Project Researcher Dr Jenny Spiga and Project Officer Stephanie Connah), and it ran from February until July 2022. The

collaboration with INWES (which has proved to be very successful, reaching over 60 countries worldwide) added breadth and depth to the project. This project is the natural development of a long lasting partnership, to embrace different experiences and expertise.

Our goals are:

- a. To bring people together promoting access and participation in STEM research and innovation;
- b. To identify and propose solutions to overcome the existent STEM-specific barriers and challenges;
- c. To contribute to a philosophy that supports women, people with disabilities and those from ethnic-minorities or socially-disadvantaged groups in the development of strong identities and academic mindsets in STEM research.

This project is intended to be a pilot study to be followed by larger projects in the future. In this first study, action was taken in three ways:

- a. Collecting data and resources about underrepresented groups in STEM.
- b. Expanding our network to include different countries, institutions and universities.
- c. Organising workshops and specialised events to promote STEM diversity and inclusion.

### **3. Resources and workshops**

In our webpage ([https://warwick.ac.uk/fac/sci/eng/research/enhancing\\_research\\_culture/](https://warwick.ac.uk/fac/sci/eng/research/enhancing_research_culture/)) we collected a range of relevant resources that include international policies, initiatives, projects, interventions and practices delivered across the world in the last 20 years (2002-2022) for equitable and inclusive access and participation in STEM, both in academia and industry. By extrapolating, analysing and discussing these resources, this project aims to consolidate intrinsic experiences, mindsets, attitudes and insights that feed into a reimaged culture for enhancing access and participation in STEM research and innovation.

The partnership with INWES, official NGO partner of UNESCO, enabled a dynamic cooperation with the five INWES regional networks, namely Asia and Pacific Nation (APNN), African Region (ARN), Middle East and North Africa (MENA), Europe and America.

During the whole duration of the project we delivered several virtual events listed below:

- A kick-off meeting (February 2022)
- Ten virtual workshops (March-June 2022), two for each region.
  - I. The first five dialogue workshops introduced the project and discussed the current status, barriers and opportunities for equitable and inclusive representation to STEM research and innovation at regional and (when possible) national level.
  - II. The last five workshops have been organised for knowledge sharing, showcasing and discussing evolutions (policies, initiatives, projects and interventions) delivered in the last 20 years (2002-2022) at regional level to promote diversity and inclusion.
- An international Concluding Symposium (July 2022) to present and disseminate the outcomes of the project.

For each workshop we delivered agendas and minutes of meetings, photographs, social media releases, digital project brochures and posters, as well as recordings of all the virtual events which can be found on our resources page as well as on the YouTube INWES channel. Below a summary of each event can be found in chronological order.

### 3.1 Kick Off Meeting - Thursday 24 February 2022 14:00 UTC

Attendees included the Executive Team (Georgia Kremmyda and Jung Sun Kim), the Project Team (Jenny Spiga and Stephanie Connah), the Operations Team (Nadia Ghazzali, Sylvia Kegel and Belen Garcia), the Advisory Team (Gail Mattson, Battsengel Baatar and Peggy Layne). The network Chairs/Leads were also present: the APNN Chair (Ariunbolor Purvee) and Lead (Khin Sandar Tun), the ARN Chair (Rufina Dabo) and Lead (Vicky Kondi), the EUROPE Chair (Sylvia Kegel), the MENA Chair (Nadia Soussi) and Lead (Najla Triki), the AMERICA Chair (Sylvia Ortega Azurduy).

An agenda/list of attendees and project synopsis were circulated in advance of the meeting. After an initial welcome from the Executive Team, each participant introduced themselves briefly. The project, its background, aim and objectives and a schedule of upcoming events were discussed. There was a discussion on how to disseminate, coordinate and delivery the events, as well as the next steps and actions to take. The proposed order of regional events was presented, and each regional chair was given indication on how to invite speakers and panel members (who can advise on topics) and organise the content, with the option to receive translation and technical support if needed. It was agreed to contact people working in academia, industry professionals, governmental organisations in the region, and any other organisations specialising in diversity. The Project Team proposed to commence the literature review and organise a webpage for the project. It was also discussed that it was impossible to conduct specific surveys due to time constraints of the ethical approval process. However we discussed about conducting targeted surveys for future projects.

### 3.2 Middle East & North Africa Dialogue Webinar – Saturday 9 April 2022 09:00 UTC

The first webinar was organised by the MENA region. It was moderated by Dr Safa Nassereldin, associate professor at the Faculty of Engineering of the University of Al-Quds University. There were a total of 25 attendees. There were a total of five speakers (Eng Kaouthar Lihidheb -keynote speaker, Dr Manar Abu Talib, Dr Marianne Azer, Dr Mona Itani and Dr Rima Abbasi) representing Tunisia, Egypt, Palestine, Lebanon and UAE, as well as a welcome speech delivered by the Inwes President Prof Jung Sun Kim.

The graphic features a central network diagram with five nodes representing speakers: Jung Sun Kim (Inwes President), Eng Kawthar Lihidheb (keynote), Dr Manar Abu Talib, Dr Marianne Amir Azer, and Dr Rima Abbassi. A moderator, Dr. Eng. Safa Nassereldin, is also shown. Logos for INWES and the University of Warwick are present. The registration link is provided at the bottom.

**Project : Reimagining a STEM Research Culture**  
Mena region

Supported by the University of Warwick

**Webinar**  
Role of women in STEM research and innovation in the MENA region  
April 09th, 2022 - 09:00 UTC

**Welcome speech**  
Jung Sun Kim  
Inwes President

**Moderator : Dr. Eng. Safa Nassereldin**  
Presidential Secretary  
General - Presidency office  
Ass. Prof. at Faculty of Engineering  
Al-Quds University

**Eng Kawthar Lihidheb**  
Vice-president ATFI in charge of collaboration with INWES  
MENA - Senior sustainable energy specialist  
Tunisia

**Dr Manar Abu Talib**  
Chair of Research Outreach  
Department, Office of Vice Chancellor  
Office for Research & Graduate Studies  
at University of Sharjah, UAE.

**Dr. Marianne Amir Azer,**  
Former Member of Parliament,  
Associate Professor and Director of Information  
Center, National Telecommunication Institute  
Associate Professor, Nile University

**Dr Mona Itani :**  
Entrepreneurship and Business  
Development Expert/Founder at Riyadh  
for social Innovation SARL - American  
university of Beirut - University of  
Leicester

**Dr Ryma Abbassi**  
Associate Professor and  
Director at ISETCOM  
Tunisia

Registration link : <https://inwes.zoom.us/j/8150417274>

Agenda			
Welcome speech	Inwes and project presentation	Jung Sun Kim	5/10mn
Keynote presentation	The presentation will focus on the contribution of women in STEM in research and innovation	Kawthar Lihidheb	20mn
Round 1	Actual situation in different countries of the region	All panelists	20mn

<b>Round 2</b>	Barriers/opportunities	All panelists	20mn
<b>Round 3</b>	Examples of adopted solutions in different countries	All panelists	20mn
<b>Discussion</b>	Give the floor to participants to add comments, experiences, or ask questions or also suggest propositions	Participants	35mn

The workshop highlighted the actual situation in the region, where women are present in the university and R&D fields with high ratios, however their participation drastically reduces in permanent position. The ratio of start-ups owned by women is still low, and the rate of R&D spending (in the GDP) in some countries of the region, is low.

Some barriers that women are facing in STEM disciplines were identified. Some of them are cultural and based on stereotypes that see women expected to work in professions with a high rate of empathy instead of scientific positions. Also, women prefer stable positions, for example in the administration.

There appears to be a lack of confidence in women, who only answer recruiting calls when they are sure of being retained. There is a lack of family support, and some women find it difficult to travel abroad for work, often feeling guilty if they do so. Women experience a lack of mentorship and support, and often struggle to develop a strong network. Additionally, in some countries of the region women are asked to immigrate abroad due to political problems in order to continue studying, which highlights the need of working on facilitating access to e-learning platforms.

A few potential solutions were suggested, including the need to strengthen collaboration, learn from successes, encourage women to be involved in the private sector, encourage women to join meaningful associations and communities. A need to share regional initiatives was also emphasized.

### 3.3 African Region Dialogue Webinar – Saturday 23 April 2022 10:30 UTC

The African Region Dialogue Webinar was organised by the Rufina DABO SARR, associate professor at the Université Virtuelle du Sénégal and Chair of the African Region Network. The webinar was followed by more than 50 attendees from around the world. There were a total of four speakers (Prof Ménémore Karimumuryango, Prof Ruby Hanson, Lecturer Eva Liliane Ujeneza and Professor Olubukola Oluranti Babalola) representing Burundi, Ghana, Kenya, Nigeria, Sénégal and South Africa, moderated by Dr Victoire Kondi Akara, researcher in climate science at AIMS Rwanda Centre of Excellence.

**Project: Reimagining a STEM Research Culture**

**Moderator:**  
Dr. Victoire KONDI AKARA  
Director Francophone Africa INWES

**Ruby Hanson**  
Professor of Chemistry Education,  
University of Education, Winneba

**Ménémore KARIMUMURYANGO**  
BURUNDI University  
President of DWSO/Burundi

**Olubukola Oluranti BABALOLA**  
Pr.Sc.Nat., MASSAF, FASLP, FTWAS,  
FAS

**INWES**  
African Regional Network

**WARWICK**  
Supported by the University of Warwick  
Webinar

**Gender equity and inclusion in STEM, research and innovation in Africa**  
April 23rd, 2022 - 10:30 UTC/GMT

Registration link:  
<https://inwes.zoom.us/j/84612444444>

**inwes.org**

<b>Agenda</b>			
<b>10:30</b>	Introduction by the Moderator, Director INWES Francophone Africa	Dr. Victoire KONDI AKARA	10mn

10:40	Opening remarks	Ass Prof Rufina DABO SARR	5mn
10:45	Presentation of the WARWICK-INWES Project	Jung Sun Kim	10mn
10:55	Presentation 1	Professor Ménédore KARYMUMURYAGO University of Burundi	15mn
11:10	Presentation 2	Professor Ruby HANSON University of Education Winneba, Ghana	15mn
11:25	Presentation 3	Professor Olubukola Oluranti BABALOLA Director OWSD Africa	15mn
11:40	Presentation 4	Lecturer of mathematics Eva Liliane UJENEZA, Founder and Co-Chair of the Rwanda Young Academy of Science	14mn
11:55	break		
12:00	Contributions and questions	Participants	20mn
12:20	Closing remarks	Professor Caroline THORUWA AWSE Chair Former SG of INWES	10mn

In her presentation, Professor Karimumuryango evaluated the presence of girls and women in scientific fields at all levels. She shared information regarding the rate of participation of scientific women in decision-making. Professor Ruby Hanson explored education, energy, environment, nutrition, health, poverty, insecurity, and water issues, all major challenges that have an impact on personal and professional lives. Some solutions were suggested, such as the need to increase the number of infrastructures, equipment and reforms, bridge the gap between theory and practice, integrate more real life questions into teaching programmes and improve the quality of teaching of science in order to reinforce knowledge and competencies in STEM subjects. It was also highlighted the need to promote apprenticeships based on experience in order to develop entrepreneurial competence. Professor Olubukola Oluranti BABALOLA talked about the organisation for women in science in the developing world as well as the factors influencing the inclusion of women in STEM. Lecturer Eva Liliane UJENEZA focussed on the evolution of STEM representation in Rwanda, the key challenges of equality and inclusion and initiatives that aim to increase the participation of women in research.

### 3.4 European Regional Network Dialogue Webinar – 27 April 2022 10:30 UTC

The European Regional Network Dialogue Webinar was moderated by Dr Jenny Spiga, and after a welcome from Sylvia Kegel and a talk about INWES from the President Dr Jung Sun Kim it presented five distinguished speakers (Em Prof Colette Guillope, Dr Christina Haaf, Prof Manjit Dosanjh, Dr Nina Baker and Prof Isabel Carillo Ramiro), representing Italy, UK, France, Germany and Spain.

**Project: Reimagining a STEM Research Culture**

**INWES** European Regional Network

**WARWICK**

**Gender equity and inclusion in STEM, research and innovation in Europe**  
April 27th, 2022 - 09:00 UTC/GMT

**Registration link:**  
<https://inwes.zoom.us/join/register/?ZAAccuCrVtKxGNbcEA7SpjyAGTPmJDXq8B0Z>

**Speakers:**

- Dr Jung Sun KIM**, INWES President
- Sylvia Kegel**, Telecommunications Engineer, Entrepreneur, INWES Treasurer, Chair of INWES Europe
- Moderator: Dr Jenny Spiga**, Assistant Professor at the Department of Physics of the University of Warwick
- Colette Guillopé**, Emerita Professor in Mathematics, Université Paris-Est Créteil, Vice President of EPWS
- Christina Haaf M.A.**, Consultant in the Competence Center Technology-Diversity-Equal Chances in the National Pact for Women in MINT-Careers
- Manjit Dosanjh**, CERN honorary staff, Visiting Professor at the University of Oxford
- Nina Baker**, Engineer and independent historian researching the history of women in engineering
- Isabel Carillo Ramiro**, Dean of the School of Industrial Design and Engineering, UPM

**inwes.org**

TIME	Duration	TITLE	Speakers
9:00	10 min	Welcome	Dr Sylvia Kegel
9:10	5 min	Introduction to the project	Dr Jenny Spiga
9:15	5 min	Introduction to INWES	Prof Jung Sun Kim
9:20	20 min	She figures in the EU	Em Prof Colette Guillope
9:40	10 min	History of Women in the UK	Dr Nina Baker
9:50	10 min	Where is the gap	Dr Manjit Dosanjh
10:00	10 min	German experience for more women in STEM	Dr Christina Haaf
10:10	10 min	Students with disabilities at UPM	Prof Isabel Carillo Ramiro
10:20	10 min	Women in STEM in France	Em Prof Colette Guillope
10:30	20 min	Discussion and final remarks	All

Em Prof Colette Guillope presented the She figures in the EU, as well as the situation of Women in STEM in France. She is part of the European Platform of Women Scientists, which recognises the importance of networking as well as the need of an association platform. She figures are statistics and indicators that reflect the situation of gender in research and innovation. Since 2010, the proportion of women among doctoral graduates has increased, moving the pool of doctoral graduates closer to gender parity. In 2019 in the majority of countries in Europe, a greater proportion of men were employed as scientists and engineers compared to women within the total labour force. Women researchers represent only 20.9% of researchers at European level while they represent 32,8% in all sectors, private, academic, and government. Women researchers in the higher education sector represent 42,3% of researchers at European level while they represent 43,7% in the government sector. At European level, 23.6% of women were heads of institutes in higher education in 2019, 2.4 percentage points higher than in 2016 (21.3%). These data suggest that some progress has been made in improving women's representation in decision-making and leadership positions in this sector. At European level, 5.9% of women and 7.7% of men are in a precarious position, often student position. 2020 ERA Communication is committed to strengthening measures to reduce the precariousness in the EU. A gender-sensitive approach is needed to address the gendered patterns in precariousness and part-time work. The higher the value of Glass Ceiling Index (GCI- Proportion of Women in Academia to Top Academic Positions), the stronger the glass ceiling effect and the more difficult it is for women to move into a higher position. The GCI value was around 1.5 in 2018, compared to a value of around 1.6 in 2015. GCI = 1 means women and men have the same chance to be in a high level Academic position. Scissor patterns are presented, showing no difference between 2015 and 2018.

The share of women is even smaller among Bachelor's and Master's students (32%) and graduates (35%) and across all grades of academic staff (grade C: 35%; grade B: 28%; grade A: 19%). More information on this can be found here: <https://ec.europa.eu/assets/rtd/shefigures2021/index.html>.

In her second talk, Em Prof Guillope talked about the networks of women in STEM available in France such as the Association Femmes & Sciences, Femmes Ingénieures (Women Engineers), established in 1982, Elles bougent (Women on the move), established in 2005 Femmes et Physique (Women and Physics), commission of Société française de physique (French Physical Society), Femmes et Informatique (Women and Computer Science), commission of Société informatique de France (France Computer Science Society), WIN - France (Women in Nuclear), Cercle interElles (Women Leaders in the Private Sector) established in 2000, AFDESRI (Women Leaders in Higher Education and Research),



established in 2014, Femmes du numérique (Women in Numerics), commission of Numeum, professional union of companies in Numerics. Among the European Networks she cited EPWS, INWES, EWM (European Women in Mathematics), and the world network Committee for Women in Mathematics (International Mathematical Union). The actions taken by these committees include: visiting high schools and universities (about 12,000 students or pupils a year); organising forums for young women (and men) mathematicians; organising specialised conferences «something and Women»; mentoring (post)-doctoral women students; making known the scientific contributions of women in STEM now and then (portraits, names of streets, schools, amphitheatres); collecting data about women in STEM; creating networks in countries, institutions, universities; making lists of women experts and diffuse them; promoting gender studies and gender viewpoint in each discipline; sending letters, tweets about lack of women in scientific conferences, editorial boards; elaborating the terms of new laws for higher education and research or following them up (i.e. at least 40 % of each sex in recruitment committees in France; elaborating indicators for measuring gender equality; supporting gender balance within research teams and the inclusion of a gender dimension in research; addressing discrimination against women in Higher Education Institutions. Some suggestions have been given on what governments can do: adding quotas for decision-making positions in education; give more chairs to women (Germany 0.8 to 8 % women mathematics professors in 20 years); Laws, conventions, charters: creation of Equality officers at university with their own budget; Guides, recommendations: Guide for a public communication without sex stereotype; networks should stay and continue their job with new people supporting their objectives even when a new government is elected.

Dr Nina Baker could not participate in the webinar so she sent a video of her presentation. Being an independent historian researching the history of women in engineering, she presented some stories from her new book, a biography of the aeronautical engineer, Hilda Lyon: “Adventures in Aeronautical design. The life of Hilda M. Lyon”.

Dr Manjit Dosanjh explained the role of STEM and innovation in determining the power and wealth of a country. She presented some eye opening data: women account for 70% of those living below the poverty line, 62 million girls do not go to school, women own just 1% of the world’s land, and finally women and children are 14 times more likely to die than man during a natural disaster. There is a necessity to use all the resources available to meet global challenges: diverse teams outperform of 15-20% compared to men only. Both the WEF and UNESCO reports found that women are still under-represented in fields such as computing, digital information technology, engineering, mathematics and physics. Good news is that there is progress: more girls are going to school, fewer girls are forced into early marriage, more women are serving in parliament and positions of leadership, and laws are being reformed to advance gender equality. Globally, women have achieved parity (45–55%) at the bachelor’s and master’s levels and are almost there at PhD level (44%) but the gap tends to widen as they pursue their career. Women represented 33.3% of all researchers in 2018, up from 28.4% in 2013. In academia, female researchers tend to have shorter, less well-paid careers. Their work is underrepresented in high-profile journals. An analysis of nearly 3 million computer science papers published in the USA between 1970 and 2018 concluded that gender parity would not be reached in this field until the year 2100. When it comes to the world of science, women are in the minority. Less than 30% of the world’s researchers are women and this under-representation occurs in every region in the world. Global female enrolment is particularly low in certain fields. Just 3% of students joining information and communication technology (ICT) courses across the globe are women. That improves slightly to 5% for mathematics and statistics courses. And it increases to 8% for engineering, manufacturing and construction courses. Entrenched Gender stereotypes and gender bias are driving girls and women away from pursuing careers in science-related fields. Gender parity was expected to

be reached in 99.5 years. However, after covid, this time increased to 135.6 years. Techniques to bridge the gender gap are suggested and include sharing knowledge and empowering, teaching, mentoring, putting up ladders and giving a helping hand.

Dr Christina Haalf talked about the German experience for more women in STEM. She introduced Kompetenzz, a German major network on the topics of technology, diversity and equal opportunities. The Competence Center Technology-Diversity-Equal Opportunities e. V. (kompetenzz) is located in Bielefeld as an affiliated institute of the Bielefeld University of Applied Sciences. They promote Girls' Day, Boys' Day, Go MINT, Future Workshop on Demography (ZWK) and cliché-free events. In 2020 of 1.101.943 STEM students, 348.799 (1980: 70.719) are female. Overall, an increase from 20.5 to 31.7 percent, a good 10 percentage points achieved in 20 years. In 2020 of 228,381 first-year students, 61,901 (1980:5.040) are female. This means that the proportion of women in 2020 is 26.4 % (1980 11,2 %). Of a total of 122,838 degrees in 2020 30,608 are taken by women. (1980: 1,772). This corresponds to a female share of 24.9 %. (1980: 7,2%). In 2020 of 100,186 first-year students, 52,302 (1980: 12.682) are female. This means that the proportion of women in 2020 is 26.4 % (1980 36,5%). Of a total of 49,989 degrees in 2020 25,318 are taken by women. (1980: 5,419). This corresponds to a female share of 50.6 %. (1980: 32 %). In the area of research and development (R&D), the share of women in total R&D personnel (scientific, technical and other personnel) is around 27 %. Among researchers, the share of women is only about 23 %. There are clear differences between the sectors. In 2017, for example, women accounted for nearly 43% of total R&D personnel in universities, about 41% in the government sector and only about 19% in the business enterprise sector (Federal Report on Research and Innovation, 2020). In 2019, only 25.6% of professorships in Germany were held by women (Joint Science Conference (GWK), 2021). The proportion of professorships held by women varies widely across subject groups and in 2019 was: in the humanities: 39.2%, in mathematics and natural sciences: 19.9%, in engineering sciences: 13.6%, in the STEM subjects as a whole: 15.8%, in human medicine/health sciences: 24.7% (Equal Opportunities in Science and Research, GWK, 2019/2020).

Prof Isabel Carillo Ramiro presented the inclusive programme of attention to students with disabilities and students with specific needs of educational support at the Universidad Politecnica de Madrid. She explained that students with disabilities now make up a significant part of the student population, and that their rights are protected by the Convention on the Rights of Persons with Disabilities (CRPD) which promotes the rights of persons with disabilities to education, and states that universities should be inclusive and incorporate the diversity. The Universidad Politecnica de Madrid has a specific unit for attention to diversity programme, which comprises resources and adaptations, grants and scholarships, as well as awareness workshops and campus accessibility. Students with special educational needs account to less than 1% of the total student population. Only 53.5% of them ask for curricular adaptations. Adaptations include extension of exams times, tutoring and guidance for teachers, access, admission and enrolment reserved spaces (5%), adaptation of oral exams, type of test, special library services and sign language interpreter.

### **3.5 Asia Pacific Regional Network Dialogue Workshop - 7 May 2022**

The first webinar of the Asia Pacific regional network was organised and moderated by Dr Ariunbolor Purvee. It had 81 registrants and 32 participants. There were a total of three speakers (Dr. Leong Wai Yie, Board member of INWES, Dr. Seema Singh, Board member of INWES and Dr. Ryo Kimura, Chair of JNWES) representing countries of Australia, Mongolia, Bangladesh, Japan, Malaysia, Myanmar, Nepal, New Zealand, Pakistan, Sri Lanka, Vietnam and Philippines.

**Reimagining a STEM Research Culture: Lessons Learnt from 20 years of Evolution for Inclusive Representation in Science and Engineering**

**First Webinar: Saturday 07 May 2022, 3:00 am – 4:40 AM UTC via Zoom**

**Second Webinar: Saturday 21 May 2022, 3:00 am – 4:40 AM UTC via Zoom**

**Speakers:**

- Dr. Leong Wai Yie, The Institution of Engineers Malaysia, IEM
- Mrs. Khishigdulam Tumurbaatar, Women in STEM Mongolia
- Dr. Seema Singh, Women in Science and Engineers in India, WISE India
- Dr. Ryo Kimura, Japan Network of Women Engineers and Scientists, JNWES
- Dr. Anya Maan-Yun Lin, Taiwan Women in Science and Technology TWIST
- Dr. Jung Sun Kim, INWES President
- Dr. Le Minh Thang, Vietnam Association for Intellectual Women, VAFIW
- Moderator: Dr. Ariunbolor Purvee, APNN Chairperson

**Register in advance for this meeting:**  
<https://inwes.zoom.us/j/4sHTUQn-a1ze77EMYLrz1ysorZ>

**Register in advance for this meeting:**  
[https://inwes.zoom.us/j/6grDspHNLyQ3g\\_ATGNhwL\\_7Hsah0](https://inwes.zoom.us/j/https://inwes.zoom.us/j/6grDspHNLyQ3g_ATGNhwL_7Hsah0)

TIME	Duration	TITLE	Speakers
11:00-11:05	5 min	Welcome and introductions of speakers	Dr. Ariunbolor Purvee, APNN Chair
11:05-11:10	5 min	Introduction to the project	Dr. Jung Sun Kim, President of INWES
11:10-11:30	20 min	MyRA: Performance Indicators for the Advancement and Evolution of Malaysian STEM Research – A More Inclusive Approach	Dr. Leong Wai Yie, Board member of INWES
11:30-11:50	20 min	Enhancing Research Culture in STEM Tertiary Education in India	Dr. Seema Singh, Board member of INWES
11:50-12:10	20 min	Overcoming the wall of "unconscious bias"	Dr. Ryo Kimura, Chair of JNWES
12:10-12:27	17 min	Discussions	All speakers
12:27-12:30	3 min	Closing remarks	Dr. Ariunbolor Purvee, APNN Chair
Content Here	90 min	Three topics	Three invited speakers

Dr RYO KIMURA, from the JNWES Japan Network of Women Engineers and Scientists, talked about unconscious bias being one of the major causes for Japan classifying 120<sup>th</sup> in the gender gap ranking. Japan only has 1.7% women engineers. Some people still think that girls are not good at science and mathematics and that childcare is a woman's job. The STEM enrolment rate of female students is almost unchanged in 20 years. She proposes a few solutions to the problem: to introduce role models, to cultivating independence to be not afraid of change, and to foster self-awareness. Some events have been organised to deliver lectures and science experiments in the classroom, with the provision of booklets and DVDs and the possibility to talk to scientists. The feedback they had was that some of the girls had very little knowledge of work related to STEM work and career paths.

Dr Leong Wai Yie, IET Industry Revolution Malaysia, talked about the performance indicators for the advancement and evolution of STEM research in terms of innovation, funding and publication in Malaysia, for last 20 years. They have seen an increase in the women enrolment in undergraduate studies programmes, as well as in doctoral positions. In Malaysia, all universities are required to do annual self-assessment based the Malaysian Research Assessment tool (MyRA). The main criteria considered are publications with impact factor journals followed by external research funding. Interestingly, the South East Asia's technology sector has a relatively strong start in terms of women representation compared to other countries. The share of women in higher education is, for example,

39% in SEA, compared to 24% in the US and 19% in the UK, whilst the share of women in the workforce is close to 30% everywhere apart from India, where it is 18%. She presents an interesting comparison of the top influences in favour of technology. 56% of women choose to study technology in higher education for personal interest, 11% because of its versatility, and 9% because they believe to have the right skills. In terms of first job, technology is chosen as it is the same field as education (16%), because of personal interest (13%) or for compensation and benefits (9%). 18%, however, perceive it as a difficult career path, or with limited access to other career opportunities (15%). In terms of long-term career path, 17% choose it for compensation and benefits, 12% for work-life balance, and 11% for career advancement opportunities. Some of them leave for lack of advancement opportunities (11%), family related responsibilities (13%), or for the simple desire to pursue another career path (17%). She concludes that more women in the workforce can further boost Malaysia's growth prospects, but from 2006 to 2016 they have seen a female participation increase from about 40% to 50%, which is still low compared to countries such as Singapore, Thailand, and Vietnam, where 70% is reached (sources: Department of Statistics, Malaysia, World economic forum, the Global Gender Gap Report, 2016).

Dr Seema Singh, WISE India, talked about the STEM tertiary education in India. Even though tertiary education is supposed to perform three functions i.e. knowledge creation (research), dissemination of knowledge (teaching) and extension of knowledge, the Indian STEM education system was mainly performing the second. The Indian market was protected, leading to less competition for domestic producers. After liberalisation and the opening up of the economy during the 1990s, the market has become very competitive. Producers are continuously improving technological inputs to survive in the market. Even the educational sector has become very competitive. They have to comply with the various national and international ranking systems and accreditation programmes in which research has been given importance. All these have enhanced the significance of research in the STEM tertiary sector. Various measures have been taken to enhance research: sponsored projects, various national and international research competitions for students through corporate houses, increase in number of PhD students, cash awards for publishing in reputed journals, hackathon on important themes for engineering students, students' research competition organised by professional bodies and allowing the research funding to be done as a Corporate Social Responsibility Activity. 2010-2020 was declared as decade of innovation, and in 2020 an India-centric Equity and Inclusion channel was developed for tackling all forms of discrimination, exclusions and inequalities in STEM. Proportionate representation of women in selection/evaluation committees was guaranteed, as well as consideration of experienced women scientists for leadership roles. They introduced regular gender and social audits in academic and professional organisations and policies for rural/remote areas, marginalised communities and persons with disabilities. LGBTQ+ policies will be included as well. There are a few programmes to promote enhanced participation of women in stem, which include KIRAN (Knowledge involvement in Research advancement through nurturing) which provides research grants to female resuming their career after a break; SERB-POWER (Promoting opportunities for Women in exploratory research), which provides structured support in research to ensure equal access and weighted opportunities for Indian women scientists engaged in R&D activities in terms of fellowships and grants; Indo-US Fellowships for Women in STEM, to encourage women to undertake international collaborative research in premier institutions in USA for 3-6 months; GATI (Gender advancement for Transforming Institutions), which encourages institutions to create SMART (specific, measurable, achievable, relevant and time-bound) actions plans for systemic and cultural transformation; Women Scientists Scheme-A (WOS-A) for conducting research in basic and applied science; Women Scientists Scheme-B (WOS-B) for Science and technology interventions for societal benefit; Women Scientists Scheme-C (WOS-C); BioCARE, a programme of the Department of Biotechnology programme to

encourage women scientists in Biotechnology research; CURIE (Consolidation of University Research for Innovation and Excellence in Women Universities) to attract, retrain and retain promising girls students in the Science and Technology domain. Dr Seema Singh also talked about policies taken for work-life balance by the government: nurseries for children of working mothers and women in maternity benefit programmes, dual recruitment policies for women who had a career break, new flexible schemes to address mobility issues, and the compulsory setting up of Offices of equity and inclusion. Additionally, many employments or internship opportunities are announced for women only, and a Chennai-based organisation called AVATAR acts as a diversity advocate and workplace inclusion firm, ranking organisations on criteria such as women representation, women promoted (out of total women), maternity retention, women hired out of total hired and women in leadership. As per the latest R&D statistics (2019/2020), India has 16.6% of women researchers directly engaged in R&D activities. The percentage of women pursuing a PhD has increased from 38% in 2022-3 to 45% in 2019-2020. Noticeable are the data presented on the number of females presidents of the Indian science congress association established in 1914 which have been 4 in total, and the number of females receiving the prestigious Shanti Swarup Bhatnagar Prize since 2000, which are 19 compared to 552 males. Finally, the government of India has enacted three legislations for persons with disabilities, which are: Persons with disability Act, 1995, which provides education, employment and creation of barrier free environments, social security etc; National Trust for Welfare of persons with autism, cerebral palsy, mental retardation and multiple disability Act, 1999, which provides legal guardianship and creation of enabling environment to give them as much as independent living as possible; rehabilitation council of India Act, 1992, which deals with the development of manpower for providing rehabilitation services. Additionally, there is a scheme for integrating persons with disabilities in mainstream of technical and vocational education, which started in 199-2000, and the Ministry of Education ranks institutions giving points for development of infrastructures for students with disabilities. There are also programmes to enhance participation of students in STEM, such as the Atam Nirbhara Bharat for R&D, the Vigyan Jyoti for S&T (particularly where women are underrepresented) and the Tequip from the World Bank for improving labs and libraries and for participation at international events. There are specific organisations which provide STEM content for students in STEM, such as braille books and audiobooks. In conclusion, India is working well to make research an inclusive space.

### **3.6 Asia Pacific Regional Network Knowledge Sharing Workshop - 21 May 2022**

The Asia Pacific Regional Network Knowledge Sharing Workshop was moderated by Dr Ariunbolor Purvee. After a welcome speech from Dr Jung Sun Kim, the INWES president, three distinguished speakers were invited to talk: Mrs Khishigdulam Tumurbaatar, representative of Women in STEM Mongolia, Dr Le Minh Thang, representing the Vietnam Association for intellectual women, and Dr Anya Maan-Yuh Lin, representing the Taiwan Women in Science and Technology TWIST.

**Reimagining a STEM Research Culture: Lessons Learnt from 20 years of Evolution for Inclusive Representation in Science and Engineering**

**First Webinar: Saturday 07 May 2022, 3:00 am – 4:40 AM UTC via Zoom**

**Second Webinar: Saturday 21 May 2022, 3:00 am – 4:40 AM UTC via Zoom**

**Speakers and Topics:**

- Dr. Leong Wai Yie**, The Institution of Engineers Malaysia, IEM: "MyRA: Performance Indicators for the Advancement and Evolution of Malaysian STEM Research – A More Inclusive Approach"
- Dr. Seema Singh**, Women in Science and Engineers in India, WISE India: "Enhancing Research Culture in STEM Tertiary Education in India"
- Ms. Ryo Kimura**, Japan Network of Women Engineers and Scientists, JNWES: "Overcoming the wall of 'Unconscious bias'"
- Dr. Jung Sun Kim**, INWES President: Welcome speech
- Dr. Ariunbolor Purvee**, APNN Chairperson: Moderator
- Dr. Anya Maan-Yuh Lin**, Taiwan Women in Science and Technology TWIST: "Enhancing research culture of Taiwan for Gender equality: 'Wow~ This is so called Gender in Science and Technology (GiST)'"
- Mrs. Khishigdulam Tumurbaatar**, Women in STEM Mongolia: "Mongolia's scientific journey in the past 100 years"
- Dr. Le Minh Thang**, Vietnam Association for Intellectual Women, VAFIW: "Raising STEM passion for students, especially female students"

**Register in advance for this meeting:**  
<https://inwes.zoom.us/join/register/tZwsc-qhrZ4sHUQn-a1ze77EMYLrz1ysorZ>

**Register in advance for this meeting:**  
[https://inwes.zoom.us/join/register/tZAlc-6grDspHNLyQ3g\\_AfGNhwL\\_7Hsah0](https://inwes.zoom.us/join/register/tZAlc-6grDspHNLyQ3g_AfGNhwL_7Hsah0)

TIME	Duration	TITLE	Speakers
11:00-11:05	5 min	Welcome and introductions of speakers	Dr. Ariunbolor Purvee, APNN Chair
11:05-11:15	10 min	Introduction to the project	Dr. Jung Sun Kim, President of INWES
11:15-11:35	20 min	Enhancing research culture of Taiwan for Gender equality: "Wow~ This is so called Gender in Science and Technology (GiST)"	Dr. Anya Maan-Yuh Lin, Taiwan Women in Science and Technology (TWIST)
11:35-11:55	20 min	Raising STEM passion for students, especially female students	Dr. Le Minh Thang, Vietnam Association for Intellectual Women, VAFIW
11:55-12:15	20 min	Mongolia's scientific journey in the past 100 years	Mrs. Hishigdulam Tumurbaatar, Women in STEM Mongolia
12:15-12:55	40 min	Discussions	All speakers
12:55-13:10	15 min	Announcement APNN 2022 in Malaysia Closing remarks	Dr. Ariunbolor Purvee, APNN Chair
Content Here	120 min	Three topics, Discussion and Announcement	Three invited speakers

Dr Anya Maan-Yuh Lin talked about enhancing research culture of Taiwan for Gender equality. Gender equity was advocated by Women's Awakening foundation, a grassroots non-government organization (NGO) since 1987. After 10-year evidence-based advocacy, the government finally formed the Women's Rights committee at highest administrative level in 1997. In the following year, a foundation of Women's Rights promotion and development was registered to implement gender actions with government supports. Following the same track, women key opinion leaders in STEM started to introduce the trend in gender mainstream in the National Science Council (current name as Ministry of Science & Technology, MOST) in 2001. In Taiwan, several proactive NGOs related with STEM are influenced by global gender mainstream, including Women in Nuclear Global established in 1994, Working group on Women in Physics & Chemistry in 2001, as well as The Society of Taiwan Women in Science and Technology (TWIST) in 2011.

Dr Le Minh Thang discussed about the importance of raising STEM passion for students, especially female students. Hanoi University of Science and Technology is one of the biggest Vietnam engineering universities, and educates about 40.000 students each year, most of them being male students. One of the aims of the university is to raise science and technology passion for students and pupils at high school, especially encouraging female students to join the engineering field. Hanoi

University of Science and Technology includes a branch of the Vietnam Association for Intellectual Women. Thus, since established in 2020, the group has focused on activities and delivered visiting tours conducting simple experiments in different technology fields (chemistry, electronics, electrical technology, mechanics) for pupils. This activity attracted a lot of pupils both male and female to participate and has raised awareness. Moreover, the group has organized a series of public lectures about different areas in engineering. These lectures are planned once a month in livestream and include technological and engineering topics such as AI, air pollution, computer vision, fashion and life, etc. Each lecture attracts about 700 views, which is a beginning step to raise STEM passion for students, especially female students since all of speakers are successful women engineers at Hanoi University of Science and Technology, and therefore good role models.

Ms. Khishigdulam Tumurbaataryn discussed Mongolia's scientific journey in the past 100 years. She talked about the social impact of science governance, particularly stakeholders' engagement as decisive impact factors taking Mongolia as a case. Human intellectual and social evolution stimulate the process of knowledge (re)creation and systematic dissemination, which varies in the outcome. Advancing in knowledge management Mongols once built the most extensive empire in human history. The role of knowledge remains to safeguard Mongolia's sovereignty and contribute to current regional and global development. Since its independence in 1921, Mongolia commenced a contemporary academic institution building journey offering free compulsory education to the public, establishing the Literary Institute (Academy of Science), training young professionals internationally and beginning national tertiary education in 1945. The primary task of the Mongolian academic community remains to enlighten the public, explore tangible and intangible resources, and create and disseminate knowledge by partnering with international scholars. The nature of research project funding altered after the 1990s democratic revolution, but the shift to alternative financial resources progresses slowly. The scarcity of financial resources for research projects constrains academic fairness and competitiveness, negatively impacting the quality of research. In recent years, internationally trained Mongolian scholars, especially natural scientists, have introduced new culture by hosting multi-party funded projects, intensively publishing in high impact factor journals, and contracting recognised publishers.

During the two webinars delivered by the Asia and Pacific Region Network, the main approaches suggested by women in STEM fields from Asian-Pacific countries for a more inclusive representation: recognising unconscious bias and educating decision-makers about this problem; enhancing the university research culture, to include more women; improving performance indicators for women's advancement; exposing gender inequalities in textbooks, and written academic communications; working to get young girls excited in STEM fields. Across all countries involved, decision-makers have been exposed to this information, including adult men, whose positions are most likely to be threatened by change and inclusiveness. The only population that has yet to be exposed to the inequalities faces is young boys. Therefore, in addition to the approaches currently in use (exposing adult men and women to the situation with data, proof, country comparisons of policies and practices, pointing out unconscious bias at play, and evidence in written communications), a future activity could include a follow-on project among these Asian-Pacific countries wherein each could implement, in their own cultural contexts, ways to incorporate messages of equality in STEM education, to the next generation. This focus on youth would require careful planning, funding, and assistance from Australian, British, and Canadian women's groups in STEM fields, to learn from their own experiences working with youths, not necessarily in the classroom. Invited speakers, extracurricular activities, clubs, and other youth group activities that reinforce the idea of equality in STEM fields could be designed and offered. These follow-on activities would be in addition to continuing to present data,

factual information, and suggested policy changes related to women in STEM fields, to each country's current decision-makers.

### 3.7 African Regional Network Knowledge Sharing Workshop - 28 May 2022

The African Regional Network Knowledge Sharing Workshop was moderated by Dr Mary Nduta Mwangi, the INWES General Secretary. After a welcome speech from Dr Jung Sun Kim, four distinguished speakers were invited to talk: Dr Okon Uduakobong, Head of Agricultural Technology Education Unit at the University of Uyo, Nigeria, Mrs Rasmata Ouedraogo, Director of the Promotion of Inclusive Education and Gender, Ing Salamata Fofana Gakou, Former Minister and President of the Association of Women Engineers of Mali (AFIMA), and finally Mrs Sakwe Itoe Mbone, Regional director of Plan International, Eastern Region of Cameroon and co-founder of She's STEM foundation.

**Project: Reimagining a STEM Research Culture**  
**African Regional Network**  
**Moderator: Dr Mary Nduta MWANGI**  
**INWES Secretary General**

**Dr Jung Sun KIM**  
**INWES President**

**Dr Okon Uduakobong**  
**Head of Agricultural Technology Education Unit, University of Uyo, Nigeria**  
**Pioneer Chair person for ARN**

**Mrs. Rasmata OUEDRAOGO**  
**Director of the Promotion of Inclusive Education, Girls' Education and gender**

**Ing. Salamata FOFANA GAKOU**  
**Former Minister, President of the Association of Women Engineers of Mali (AFIMA)**

**Mrs. Sakwe Itoe MBONE**  
**Regional Director of Plan International, Eastern Region of Cameroon and co-founder of She's STEM Foundation.**

**African STEM Research and Education Policies: 20 Years of Experience**  
**May 28th, 2022 - 10:30 UTC/GMT**

Registration link:  
[https://inwes.zoom.us/joining/register/1ZM-d06vrsrHd255jh8x3\\_u77n0fpx00ha](https://inwes.zoom.us/joining/register/1ZM-d06vrsrHd255jh8x3_u77n0fpx00ha)

**inwes.org**

TIME	Duration	TITLE	Speakers
10:30	10 min	Welcome	Dr Mary Mwangi
10:40	5 min	Opening remarks	Prof Aminata Kole Faye
10:45	10 min	Introduction to INWES	Prof Jung Sun Kim
10:55	15 min	State of the art of STEM in Mali	Ing Salamata Fofana Gakou
11:10	15 min	STEM research culture in Africa	Dr Uduakobong Aniebat Okon
11:25	15 min	STEM Education and Research in Burkina Faso	Rasmata Ouedraogo
11:40	15 min	STEM Education in Cameroon	Sakwe Itoe Mbone
11:55	5 min	Break	
12:00	20 min	Contributions and Questions	All participants
12:20	10 min	Closing remarks	All

Ing Salamata Fofana Gakou started presenting the African policies for research culture in STEM in Mali. In 2021 the number of male and female students in primary and secondary education is almost equal. However, the number of female university STEM students is about 1/3 compared to males. The leaky pipeline is evident since university level, with less and less female students progressing to achieve a degree in STEM. The proportion of STEM teachers is very unbalanced, with over 90% of men compared to less than 10% of women, and the number of female teachers is decreasing over time. Therefore plans to reinforce the participation of women in STEM are in action, including reforms, access to laboratories and scientific materials, sensibilisation and stereotypes fighting, as well as grants for the



promotion of excellence. There are also a number of scientific associations dedicated to the promotion of women in STEM, including the Association des femmes ingénieures du Mali (AFIMA), the Association des femmes scientifiques du Mali (AFSM) and the Société Malienne des Sciences Appliquées (MSAS).

Dr Uduakobong Aniebat Okon talked about the STEM research culture in Africa. She reports a series of issues:

1. Higher education and research in Africa has been marginalized in international development cooperations due to backwardness in research;
2. Higher education and research in Africa in the 2000s were placed at the heart of merely knowledge-based development and poverty reduction, supported by the MDGs;
3. The Research Operational Policies are framed to support short-term output;
4. There has been a decline in investment in research;
5. While Africa carries about 20% of the global burden of disease, Its scientific output represents less than 1% of the world's share;
6. Ineffective Institutional Leadership. For instance Corruption and bad governance are significant variables affecting the quality of teachers in STEM education in Nigeria.

She suggests a few measures to resolve these issues:

1. Considering the research efforts and developments undertaken by individuals, groups, institutions, organizations;
2. Creating, Empowering and supporting existing research networks in Africa.
3. Staff at all levels need to act as good role models and demonstrate fair, collaborative and supportive behaviour towards each other;
4. Equality, diversity and inclusion in research development need to be ensured;
5. There is a need to foster long-term international collaboration in research and publishing.

A few institutions are actively involved in the support of scientific research:

1. The African Academy of Sciences, based in Nairobi, Kenya, is a pan-African non-profit institution that supports world-class scientific research. They Engage in impactful researches contributing to Africa Development;
2. IITA -Ibadan, Nigeria, is an award-winning research-fordevelopment (R4D) organization, providing solutions to hunger, poverty, and the degradation of natural resources in Africa.
3. Institute for Advanced Medical Research and Training - IAMRAT
4. Forestry Research Institute of Nigeria
5. National Cereal Research Institute
6. IAR&T Institute of Agricultural Research and Training
7. Center for Bioethics and Research
8. Success Point Educational Consult and Research Institutes.

Dr Ouedraogo talked about the case of Burkina Faso. There are different strategies in place at the moment, including the Aspiration 1 de l' Agenda 2063, the Stratégie continentale d'éducation pour l'Afrique (CESA), the Stratégie de la science, de la technologie et de l'innovation pour l'Afrique (STISA), and the Stratégie continentale de l'EFTP. They all aim to place STEM disciplines at the heart of the socioeconomic development in Africa. Disparities in Burkina Faso are quite marked, with a total of 75% of male STEM researchers compared to 25% of women. The majority of researchers in STEM disciplines are in the agricultural field (26.7%). In engineering the percentage drops to 3.6%. Therefore, an effort is required to promote the study of STEM disciplines in general.

Sakwe Itoe Mbone talked about the case of Cameroon. In 2003, the president of Cameroon Paul Biya expressed aspirations of Cameroon to be a united nation enjoying peace and security, democracy,

decentralised administration, prosperity and universal access to quality social services through an agenda for development planning set by a Poverty Reduction Strategy Paper. This strategy gave birth to specific policies and governance highlighting key priorities to advance development and poverty reduction. Amongst which was the importance of STEM education from elementary school to higher institutions and alternative education. Gender equality, women/girls in STEM is equally at the core of this vision and ambition. Since then, Cameroon has managed to establish diverse partnerships with international organizations, bodies, and countries to advance STEM education for women and girls. Some organizations such as Plan International, World Bank, US embassy in Cameroon, UNESCO, UNICEF, UNFPA and a host of others are working tirelessly to influence policies which advance girls right and access to quality education. Cameroon is now a host of many local organizations who are continuously working to bring and ensure STEM education for girls in all parts of Cameroon especially rural communities which are a host of over 60% of Cameroon's population. Since 1994, Cameroon has evolved in the creation and sustainability of over 2000+ industries and companies operating both locally and internationally. Most of these companies are making use of technology and local talent which are a product of STEM education from schools within the country. Cameroon has regional hospitals, district and health centres in every part of its regions with the use of technological equipment and expertise reinforced and put to practice in order to advance quality health services. The country is gradually shifting from the use of manual systems to systems which make use of solar energy and technology to ensure availability of water in every sector of the country. Rural communities are mostly affected by this gap and are great examples where initiatives such as solar powered pumps are valuable and sustainable. As an emerging country by 2035, agriculture is a main contributor to advance emergence for Cameroon by 2035. Therefore, in order for it to remain in a competitive market, the government has improved policies that promote the use of machines and mechanized agriculture for large scale production and processing in order to achieve its second generation agriculture ambition. Many private and public schools in Cameroon have essential programs to enhance skills in STEM education. AI, Robotics, Engineering and much more have become essential courses delivered by some universities in Cameroon. Local organizations are equally hosting programs and bootcamps to create awareness on the availability of these programs to women and girls.

### **3.8 Latin America Regional Network Dialogue Workshop - 31 May 2022**

The Latin America Regional Network Dialogue Workshop was moderated by Dr Sarah Peers and organised by Sylvia Ortega, president of INWES Latin America. After a welcome presentation the former INWES president Gail Mattson, four speakers were presented: Ing Oralia Ramirez Banzer, president of the Women Association of Engineers in Bolivia, Mrs Mary Cruz de Urioste, from Universidad Privada de Santa Cruz de la Sierra (UPSA) in Bolivia, Mrs Maria Jose Morales Garcia, General Director of gender equality, diversity and inclusion in the Instituto Federal de Telecomunicaciones in Mexico, Dr Indira Guzman, Professor at the Universidad de Trident in California, USA.

Ing Oralia Ramirez Banzer presented the AFIB association in Bolivia, that promotes women in engineering. In the ONU agenda 2030, a plan of 17 objectives was developed, with the main aim of bringing together women in engineering promoting collaboration, gender equality, same salaries for men and women, and international collaborations in the STEM area. Mrs Mary Cruz de Urioste presented a programme of education in STEM in Bolivia, which considers a set of actions aimed at making the workplace more inclusive. She talked about the difficulties for women to balance their family and career commitments. Mrs Maria Jose Morales Garcia talked about strategies implemented at the IFT (instituto federal de telecomunicaciones) to regulate and promote the role of

telecommunications. The institute is comprises 43% female and 57% male employers. They are actively involved in reducing the gender gap. They organise a series of activities for schools to promote careers in technology. Some of these activities take place in the international women’s day.

**INWES**  
Latin América

**Proyecto: Reimaginando una Cultura de Investigación STEM**

DISCURSO DE BIENVENIDA  
Gail Mattson PE  
Exponente de INWES

Moderadora  
Dra. Sarah Peers  
Barente de Proyecto INWES  
Profesora Asociada NMITE REINO UNIDO

PhD Indira Guzman  
Directora de Estudios de Doctorado  
Profesora Universitaria Trident University  
California - USA

Ing. Oralia Ramirez Banzer  
Presidente Asociación Femenina de Ingeniería de BOLIVIA

Msc. María Jose Morales Garcia  
Directora General de Igualdad de Género, Diversidad e Inclusión del Instituto Federal de Telecomunicaciones MEXICO

Msc. Mari Cruz de Urioste UPSA  
Dr. Ernesto Viscarra UTEPSA  
Dra. Mariana Santa Cruz UCBA  
Universidad Privada de Santa Cruz  
BOLIVIA

Msc. Sylvia Ortega  
Miembro Directorio INWES  
Presidente INWES Latinoamérica

Supported by the University of Warwick  
Webinar

Equidad de Género e Inclusión en STEM, Investigación e Innovación en América Latina  
Mayo 31, 2022 - 19:00 Bolivia/23:00 UTC

Registration Link / Enlace de Registro:  
<https://inwes.zoom.us/j/83549095195>

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HORA	DESCRIPCIÓN	RESPONSABLE	NOMBRE
19:00	BIENVENIDA INWES	Coordinación	Gail Mattson
19:10	Palabras Coordinadora de Proyectos INWES Internacional	Coordinación	Sarah Peers
19:12	Presentación Panelista 1 ORALIA RAMIREZ BANZER	Moderadora	Sarah Peers
19:13	Tema: "PRESENTACIÓN AFIB"	AFIB	Oralia Ramírez
19:33	Resumen exposición Panelista 1	Moderadora	Sarah Peers
19:35	Presentación Panelista 2 MARY CRUZ DE URIOSTE	Moderadora	Sarah Peers
19:36	Tema: "Estado actual de las Barreras y oportunidades para representación equitativa e inclusiva de las mujeres en el área STEM"	UPSA	Mari Cruz De Urioste
19:56	Resumen Exposición Panelista 2	Moderadora	Sarah Peers
19:58	Encuesta 2022 "GISE"	Moderadora	Sarah Peers
20:08	Presentación Panelista 3 MARIA JOSE MORALES	Moderadora	Sarah Peers
20:09	Tema: "Empoderando mujeres: la labor del Instituto Federal de Telecomunicaciones"	IFT	María Jose Morales
20:29	Resumen exposición Panelista 3	Moderadora	Sarah Peers
20:31	Presentación Panelista 4 INDIRA GUZMAN	Moderadora	Sarah Peers
20:32	Tema: "Utilizando Metodología Mixta de Investigación en Estudios de Equidad de Género en Carreras de Sistemas de Información y Tecnología"	NCWIT	Indira Guzmán

20:52	Resumen Exposición Panelista 4	Moderadora	Sarah Peers
	Preguntas y Respuestas	Moderadora	Sarah Peers
20:54	Conclusiones Generales	Moderadora	Sarah Peers
21:00	Finalización Palabras de Despedida del Evento	Coordinación	Sylvia Ortega

Dr Indira Guzman talked about the use of mixed methodologies in gender equality research in information technology. To meet the high demand for information technology (IT) professionals, organizations must become more effective at attracting and retaining women. Ninety-seven percent in the US had implemented diversity and inclusion interventions. Despite these efforts, the percentage of women working in IT continues to decline, raising questions about the effectiveness of current organizational interventions aimed at increasing gender diversity. Recruitment, motivation, retention, support and advancement of information technology workers is critical for the continued success of organizations. They conducted a research study on students and workers in the information professions. They looked at barriers to inclusion and retention, analysed the forces that prevent high school and college students from gaining needed interdisciplinary skills, and told the stories of a diverse group of students who are thriving in new majors and new jobs. Here are some highlights:

1. Males reported higher self-efficacy concerning demands of the occupation than females.
2. Males indicated that they integrated IT into leisure more extensively than females.
3. Ethnic minorities had a more difficult time accepting with stereotypes of Geek and Nerd.
4. Individuals with better adaptation to the needs for constant updating felt a higher emotional attachment to their occupation.
5. Enjoyment of learning and keeping up with technology and the integration of IT in leisure activities are good predictors of affective commitment.
6. Participants who accept more the stereotypes of the occupation felt a lower affective commitment
7. Students who felt higher degree of enjoyment about challenges of the occupation felt a higher obligation to remain in it.

The 'ELLA' project was also presented. Its main objective is to contribute to the generation and use of cross-country comparable open data platform based on ontologies in order to assess policies, processes and practices to reduce the gender gap in STEM, to promote public discussion aimed to increase the number of female leaders at universities, industries, and public institutions in three Latin American countries: Bolivia, Brazil and Peru.

### **3.9 Middle East & North Africa Knowledge Sharing Workshop - 11 June 2022**

The Middle East & North Africa Knowledge Sharing Workshop was moderated by Dr Manab Abu Talir and included the participation of Dr Safa Nassereldin, associate professor at the Faculty of Engineering of the University of Al-Quds University, Amel Al Ali, assistant professor in informatics at the University of Sharjah, Dr Marianne Amir Azer, associate professor in telecommunications at Nile University, Najla Alkebsi, strategic business development manager for Oracle Gulf and Egypt, Dr Houda Chakiri, assistant professor of computer science at the Al Akhawayn University in Morocco, Dr Olfa Kammoun, assistant professor of economy, specialise in innovation and entrepreneurship, and finally Kais Mejri, general manager of innovation and technological development.

**INWES**  
Project : Reimagining a STEM  
Research Culture  
Mena region

Supported by the University of Warwick

Webinar  
Policies for a better impact  
of women in RDI in Mena  
Region : Review of 20 years  
of experience  
June 11, 2022 - 09:00 UTC

Registration link : <https://inwes.zoom.us/j/84166309804>

Welcome speech  
Jung Sun Kim  
Inwes President

Moderator : Dr. Manar Abu Talib  
Chair of Research Outreach Department,  
Office of Vice Chancellor Office for  
Research & Graduate Studies at  
University of Sharjah, UAE.

Dr. Eng. Safa Nassereldin  
Presidential Secretary  
General - Presidency office  
Ass. Prof. at Faculty of Engineering  
Al-Duadis University

Dr. Olfa Kammoun  
Keynote speaker, Assistant Professor  
of Economy specialized in innovation  
and entrepreneurship

Kais Mejri  
General Manager of Innovation  
and Technological Development

Amel Al Ali  
Academic, Strategic Advisor & Expert, Innovation & AI,  
Digital Transformation, Youth & Women Empowerment  
Specialist, Assistant professor college of computing  
and informatics university of Sharjah

Dr. Houda Chakiri (Morocco)  
Assistant Professor of Computer Science at  
the School of Science and Engineering of Al  
Akhawayn University

Dr. Marianne Amir Azar,  
Former Member of Parliament,  
Associate Professor and Director of Information  
Center, National Telecommunication Institute  
Associate Professor, Nile University

Najla Alkebsi  
Strategic Business Development Manager  
for Oracle Gulf & Egypt

Dr Olfa Kammoun talked about how the geography of innovation impacts the geography gender gap in innovation of the MENA countries. Despite some innovation “catch-up,” divides still exist with respect to national innovation performance in the world regions. there are no changes in terms of which world regions perform best in innovation. Northern America and Europe continue to lead, followed by South East Asia, East Asia, and Oceania (SEAO), and, more distantly, by Northern Africa and Western Asia, Latin America and the Caribbean, Central and Southern Asia, and sub-Saharan Africa, respectively. In the MENA region, the proportion of female STEM graduates is still low, less than 4 for every 10 men, with underrepresentation in 107 out of 114 countries.

Dr Safa Nassereldin talked about the Palestinians and Women. She gave an insight into the problems that Palestine is facing as a country, and in turn the marginalisation that is affecting women (financial, healthcare, career, productivity, domestic challenges). Science, technology and innovation (STI) have a crucial role in meeting all the Sustainable Development Goals (SDGs), and so does gender equality. Reducing inequality by attracting more women into STI fields will support the achievement of SDG targets. Appropriate STI policies can enhance women’s contribution to economic growth and development. She also recommends some measures:

1. Stress the need to build a community of allies and a support network of people who can advise and sustain a woman throughout her career;
2. Juggling family demands or overcoming gender bias to produce exceptional science, depends heavily on support networks;
3. Share own doubts and difficulties, as well as a shared determination to be good scientists/engineers;
4. Teach them right to education and right to achieve their goal and have their own budge, finance, job, career;
5. Teach women to be entrepreneurs, in business and in Politics. (Not enough Women Leaders in Business and Politics;
6. Our Societies should support women and harvest women education and leadership talents for a strong world economy, global peace and security.

Dr Amal Al Ali talked about Womenpreneur in UAE, policies, initiatives and challenges. The UAE business environment is committed to driving equality in the business world. It recognizes greater gender equality than any other country in the MENA region. The UAE government is driving initiatives to address gender equality in the workforce directly. It pledged \$50m to the Women Entrepreneurs Finance Initiative fund in 2017, leading to the closure of 64% of the overall gender gap in the UAE

workforce. Gender equality is one of the UAE government's declared sustainable development goals so that it becomes one of the top 25 countries in the world for gender equality by 2021. Dubai Government introduced Dubai women Establishment (DWE). The main aim of this wing is to support women to be a good entrepreneur.

Kais Mejri talked about innovation and national economic policies in Tunisia. In Tunisia women represent 50.5% of the population, with 63.6% achieving a degree, 5600 of them active in politics, and 7.85% of them are represented in the actual government. Women represent 55% of researchers in Tunisia. In Maghreb, the most common women representation is found in engineering diplomas. Tunisia is the 2<sup>nd</sup> country in the world for number of women graduated in STEM disciplines. Only 4% of the startups are founded by women.

### 3.10 Latin America Regional Network Knowledge Sharing Workshop - 21 June 2022

The Latin America Regional Network Knowledge Sharing Workshop was moderated by Dr Sarah Peers and coordinated by Sylvia Ortega, president of INWES Latin America. After a welcome presentation by the former INWES president Gail Mattson, four speakers were presented: Ing Tania Yovanovik representing Chile, Dr Federico Ernesto Viscarra Riveros from the Bolivian Universidad Utepsa, Dr Mariana Santa Cruz from the Universidad Católica Boliviana, and Sylvia Ortega Azurduy, President of INWES Latin America.

The poster features a central network diagram with six circular portraits of speakers. Text on the poster includes:
 

- INWES Latin America** logo and 'Proyecto: Reimaginando una Cultura de Investigación STEM'
- Supported by the University of Warwick
- Webinar: Equidad de Género e Inclusión en STEM. Investigación e Innovación en América Latina. Junio 21, 2022 - 19:00 Bolivia/23:00 UTC
- Registration Link: <https://inwes.com.ar/j/95294332840?pwd=V04JYms5RU0eZXVWYjRlTlRwXz0z0B>
- Speakers: Gail Mattson PE (Expresidenta de INWES), Dra. Sarah Peers (Moderadora), Ing. Tania Yovanovik (Vicapresidenta de + Mujeres Líderes en la Araucanía CHILE), Dr. Federico Ernesto Viscarra Riveros (Jefe de Investigación de la Universidad UTEPSA - BOLIVIA), Dra. Mariana Santa Cruz Torres (Coordinadora Regional de Investigación Universidad Católica Boliviana UCB - BOLIVIA), and Mac. Sylvia Ortega (Miembro Directorio INWES, Presidente INWES Latinoamérica).

Agenda			
HORA	DESCRIPCION	RESPONSABLE	NOMBRE
19:00	Bienvenida INWES	Coordinación	Gail Mattson
19:07	Palabras, Coordinadora de proyectos de INWES Internacional	Coordinación	Sarah Peers
19:12	Presentación panelista 1 <b>TANIA YOYANOVIC CATEPILLAN</b>	Moderadora	Sarah Peers
19:13	Tema 1 "El Rol De La Mujer En La Transformación Digital"	Panelista 1	Tania Yovanovik
19:33	Resumen de exposición panelista 1	Moderadora	Sarah Peers
19:35	Presentación panelista 2 <b>FEDERICO ERNESTO VISCARRA RIVEROS</b>	Moderadora	Sarah Peers
19:36	Tema 2 "Construyendo políticas públicas para una participación efectiva de las mujeres en los campos"	Panelista 2	Federico Ernesto Viscarra Riveros

	<b>de la Ciencia, Tecnología, Ingeniería y Matemática en Bolivia - Desde una perspectiva Estadística”</b>		
19:56	Resumen de exposición panelista 2	Moderadora	Sarah Peers
19:57	Cuestionario GISE (10 pausa para llenar en línea)	Moderadora	Sarah Peers
20:07	Presentación panelista 3 <b>MARIANA SANTA CRUZ</b>	Moderadora	Sarah Peers
20:08	Tema 3 <b>“Participación De Las Mujeres En El Área Stem En Bolivia”</b>	PANELISTA 3	Mariana Santa Cruz
20:28	Resumen de exposición panelista 3	Moderadora	Sarah Peers
20:30	Presentación panelista 4 <b>SYLVIA ORTEGA AZURDUY</b>	Moderadora	Sarah Peers
20:31	Tema 4 <b>“Nuevos Enfoques sobre Genero e investigación en STEM”</b>	Panelista 4	Sylvia Ortega Azurduy
20:51	Resumen de exposición panelista 4	Moderadora	Sarah Peers
	Preguntas y Respuestas	Moderadora	Sarah Peers
21:53	Conclusiones generales	Moderadora	Sarah Peers
21:00	Finalización/Palabras de despedida evento	Coordinación	Sylvia Ortega

Ing Tania Yovanovic Catepillan talked about the role of women in digital technology. Dr Federico Ernesto Viscarra Riveros talked about the public policies established in Bolivia to increase the women participation in STEM. The university enrolment in engineering is very much male dominated, with women representing only 30% of the intake. In terms of occupations, men mostly occupy executive and technical positions. Dr Mariana Santa Cruz talked about women participation in STEM in Bolivia. Policies and projects are in place to overcome the barriers, with actions including the fight of stereotypes, the promotion of STEM among girls, the promotion of female role models and measures to facilitate the balance of work and family commitments. Dr Sylvia Ortega talked about how to reduce the gender gap in the world of technology. Here is a summary:

1. Promote scientific and technological knowledge in Latin American societies and disseminate scientific culture in all geographical, administrative and cultural areas within our reach;
2. Attend face-to-face and online events of social diffusion of knowledge;
3. Follow INGfluencers: Attend, co-organize or sponsor periodic conferences and colloquia; Celebrate the international day of engineering, women in science and ICT women!!! Competitions on the youngest mother engineer, or the youngest teacher, or the most international, or the most expert on current scientific topics, etc;
4. Collect research, and produce audiovisual material on the brakes and challenges of these women (mothers) engineers and successful professionals.

She suggests that in the research surveys different audiences should be interviewed:

1. Students: they provide the vision of those who are currently studying a technical/scientific degree;
2. Research Teaching Staff (professors, full professors, assistant professors, visiting professors, etc.);
3. Associate professors: their contribution is also twofold, on the one hand there is the vision of the professional world outside the University, and on the other hand their perception of the university world in question;
4. Graduates and alumni: this is the broadest profile as it includes all those who, whether working or not, have completed university studies in technical/scientific careers.

She also suggests a plan to reach gender equality:

1. Establish an Equality Unit within the social department of the Universities;
2. Elaborate an Equality Plan - with a commission composed of representatives of the entire University Community;
3. Create an Observatory on Equality - which periodically analyses the actual situation of the University with respect to gender equality (attention to the proportion of men and women enrolled, proportion by faculties, proportion of female professors, proportion of female students who drop out, etc.).

### 3.11 European Regional Network Knowledge Sharing Workshop - 29 June 2022

The European Regional Knowledge Sharing Workshop was moderated by Dr Jenny Spiga, Assistant Professor at the University of Warwick. Ing Sylvia Kegel (Chair of INWES Europe) delivered a welcome speech, followed by the presentation of the project by the PI Georgia Kremmida, INWES VP Conferences. Three main speakers then delivered their presentations, Dr Helen Marsh from the Daphne Jackson Trust, Dr Panagotia Rouini from the University of Athens, and Prof Colette Guillope, from Universite Paris-Est Creteil. Finally, a panel of five speakers delivered a presentation on the situation of research after the conflict in Ukraine. The panel included Dr Lidiia Hladchenko, key expert of the Club of Economists NGO, Prof Tetiana Shkoda, from Jyiv National Economic University, Prof Oleksandra Yeremenko, form the Kharkiv National University, Prof Daria Koucherets, Rector of the University of AI and digitalization, and finally Dr Nataliia Harashchenko, President of the Club of economists NGO.

**Project: Reimagining a STEM Research Culture**

**INWES** European Regional Network

**WARWICK**

**Moderator: Dr Jenny Spiga**  
Assistant Professor at the Department of Physics of the University of Warwick

**Sylvia Kegel**  
Chair INWES Europe

**Prof. Georgia Kremmyda**  
INWES VP Conferences

**Lidia Hladchenko**  
Key expert of the Club of Economists NGO

**Nataliia Harashchenko**  
President of The Club of Economists NGO

**Daria Koucherets**  
Rector of the University of AI and digitalization

**Helen Marsh**  
Daphne Jackson Trust

**Panagotia (Betty) Rouini**  
Member of Gender Equality Committee of National Technical University of Athens

**Colette Guillope**  
Emerita Professor in Mathematics Université Paris-Est Creteil

**Tetiana Shkoda**  
Professor of Business Economics and Entrepreneurship Department at Kyiv National Economic University named after Vadym Hetman

**Oleksandra Yeremenko**  
Prof. at Kharkiv National University of Radio Electronics

**Gender equity and inclusion in STEM, research and innovation in Europe**  
June 29th, 2022 - 09:00 UTC/GMT

Registration link:  
<https://inwes.zoom.us/join/register/ZEpd-Crqijs69MZz4YB3uWepNusby6B->

**inwes.org**

Dr Helen Marsh presented the Daphne Jackson Trust initiative, a UK and Ireland’s leading organisation dedicated to realising the potential of returners following a career break of 2 years or more taken for a family, caring or health reason. offer flexible part-time Fellowships of two or three years duration. It is the only Fellowship which offers the combination of mentoring, retraining and flexibility. The Fellowship application process supports applicants at every stage, taking into account their career break, their personal circumstances and their career aspirations. The Trust partners with universities, research councils, charities and learned societies to support Fellows. The Daphne Jackson Trust was established in 1992 to continue Professor Jackson’s work awarding Fellowships to career returners. Fellowships are hosted at Universities, Research Institutes and Companies and sponsored by organisations with an interest in the research being undertaken. 437 Fellowships have been awarded so far. Sponsors benefit from a fully research-active professional undertaking high-quality peer reviewed research generating a breadth of impacts. Fellows leverage nearly 2X their original Fellowship investment from other research funders. Fellowships bring huge benefits to host



institutions - significant research findings & contributions towards the wider research environment. Once re-established, Daphne Jackson Fellows have successful career progression and make a wide variety of contributions (research & beyond). 9 out of 10 Fellows stay in research or teaching careers long term. The personal impact of these fellowship is summarised in this image:



Prof Colette Guillope presented the policies and measures in the European Union. She also presented a spotlight on France, Germany, Portugal and Switzerland. She highlighted the importance of networking, and that the gender balance in research policy is to be perceived from three different perspectives: research by, for and about women. There are about 12,000 women scientists in Europe, and 100 networks of women scientists from 40 countries. France has carried out a continuous “fight” for gender equality in the professional sector since the 80’s. A series of laws have been discussed and voted, the last of which in 2021, Rixain law for professional equality. In Germany, governmental actions have been carried out since the 90’s. In 2018 there were about 29% of women in academia, compared to 21% in 2001, so progress is really slow. In Portugal, there are about 43% of women in Academia (in 2018, in 2000). Very few day care centres for children are available, and most need help from the family. In Switzerland, there are no permanent positions until you are senior. In the 90’s, there were very low percentages of women professors. The percentage of women scientists holding a position in science has improved slightly. She proposes three strategic approaches to overcome gender inequality:

1. “Fix the Numbers”, focuses on increasing women's and underrepresented groups' participation;
2. “Fix the Institutions”, promotes inclusive equality in careers through structural change in research organizations;
3. “Fix the Knowledge” (“gendered innovations”) stimulates excellence in science and technology by integrating sex, gender, and intersectional analysis into research, e.g. VOICES Making Young Researchers' Voices Heard for Gender Equality.

Dr Panagotia Rouni talked about the situation in Greece, which seems to be advancing very slowly towards gender equality and inclusion. Greece has a Greek Women Engineering Association (EDEM) to create provisions for equality between women and men in employment, education and society in general. EDEM co-operates with other organisations (both abroad and in Greece), which are involved in similar issues and acts as an information unit to support women engineers in the labour market, encouraging and promoting activities of women engineers beyond their professional sphere. These can include: artistic creation, cultural activities and improvement of quality of life in general. In Greece, among tertiary-educated 25-64 year-olds, 25% studied a STEM field, and their employment rate is about 70%. Graduates who studied arts and humanities, social sciences, journalism and information

have the lowest employment prospects of all fields of study in Greece, with an employment rate of 65%. Parent's educational attainment does significantly affect the likelihood of attaining a tertiary degree in Greece. The demanding entry exam to higher education created a flourishing shadow education sector, which left behind students from lower socio-economic backgrounds and unable to pay for additional tutoring. Tertiary education improves labour-market prospects, although unemployment rates remain high. Employment rates in Greece increase with educational attainment and continue to increase with further levels of tertiary education. Employment rates in general have been decreasing steadily since 2005 at all levels of educational attainment. Young adults with below upper secondary education have been hit the hardest, with a decline of 20 percentage points, compared to a decline of 14 percentage points for adults with upper secondary education or 13 percentage points for those with tertiary education. These lower labour market outcomes compared to other countries have driven a number of educated young adults to leave the country: 427.000 of them have left Greece between 2008 and 2013, half of them young professionals. The National Law ordered the establishment of a Gender Equality Committee in each University in Greece in January 2019. It took 4 years for all universities to have a Gender Equality Committee. Among the duties of this Committee is to design and implement the 'Gender Equality Plan' of the University. This kind of plan is a prerequisite for the HORIZON application & funding. One of the main duties of the Gender Equality Committee is to handle the gender discrimination events and gender harassment/violence events. Guides of such events are now struggle to be adopted by Universities' authorities. New law for tertiary education is coming now with not a word about gender equality committees or something to replace them or supporting meters for women to advance in Academic & Research careers. The Greek Women in STEM association seeks to highlight and support the work of Greek women in STEM. This is done through interviews with the scientists themselves, articles, podcasts and events on topics related to scientific news and advancements, with reference to the contribution of Greek, researchers and scientists, a mentoring programme. The Greek Chapter of the ACM-W (ACM's Council on Women in Computing) was established in July 2018 with the vision of fostering gender mainstreaming, as well as enhancing and advocating gender balance in computer-related scientific fields and professional sectors in Greece. Its founding members number more than 40 women from academia, research institutions, and the computing industry from all over Greece and abroad. The Chapter's overall member base has exceeded 175 individuals of all genders, in less than a year since its establishment.

The Spotlight on Ukraine Panel presented the challenges that they are experiencing since the conflict started, and how women are trying to survive as a scientific community. Pre-war there was already a bad financial support, with about 30% of women considering themselves as bread winners in the family. 2% of young scientists of STEM sector have an income of over 19 thousand UAH; 17% - up to UAH 5,000; 32% - from 5 to 9 thousand UAH; 8% - from 09 to 13 thousand UAH. On average, scientists speak one language and 21% of them are therefore unable to apply for foreign grants. For the continuation of their scientific research only 4% of young scientists-women in STEM were going to working trips abroad. 58,75% of young scientists-women in STEM don't have the experience of cooperation with business. About 61,5% of young scientists-women in STEM have their own idea for startups, but only 5,9% realize this idea. After the war, many have relocated in Germany (26.8%) and Poland (25.1%). The strongest needs that they are experiencing right now are access to scientific literature, mobility programs for scientists, access to research equipment and laboratories, communication with the research teams and colleagues, lack of licensed software required for research and access to information and data. Researchers have highly benefitted of the Starlink terminals, which provide high-speed internet connection to remote locations in Ukraine when internet connection is vital but not guaranteed. Terminals have been set up on energy companies, hospitals, and other critical infrastructures. A team of researchers are ensuring the continuous development of

STEM laboratories in Ukraine during the war. The University of AI and Digitalization, for example, is an educational institution that uses STEM education to train future IT and AI innovators to create a strong and independent country built on high technology. They produced 20,000 thousand new IT specialists, with market needs being more than 35,000 thousand per year; Post-war growth is expected to reach 40,000 thousand per year. After the war, STEM labs have been exposed to major challenges due to the lack of funds, restriction of access to equipment in laboratories, lack of new samples due to import logistics, the lack of labour force due to male population involved in the war and women dispersed.

### 3.12 Global Concluding Symposium - 20 July 2022

The Global Concluding Symposium, held on the 20<sup>th</sup> July 2022, marked the end of the Research Culture project and, at the same time, celebrated the 20<sup>th</sup> anniversary of INWES. Former INWES Presidents, as well of the Unesco representative and the Warwick University Team were invited to talk. Each Regional Network Chair presented the outcomes and impacts of the Warwick Projects for their community. New INWES projects and plan for the future were presented, together with the GISE project and a summary of ICWES19.

Here is time schedule (UTC) of the webinar:

13:00 -13:10	Welcome
13:10-13:15	Unesco
13:15-13:35	Warwick University Project
13:35-14:00	WUP: Regional Networks (5 min each)
14:00-14:25	Former INWES presidents (5 min each)
14:25-14:45	INWES members talk (5 min each)
14:45-14:55	New INWES projects
14:55-15:00	GISE Project
15:00-15:05	ICWES19

### 4. Conclusions

The project has proved to be a success, bringing many people together from both academia and industry to discuss the barriers and strategic approaches towards a more inclusive and diverse STEM research culture. We had the participation of 40 distinguished speakers, who contributed sharing their knowledge, experience, mindset, ideas and resources. We had about 670 registered attendees, and more than 500 YouTube views (last updated 22/07/2022). Lessons learnt in the past 20 years have been discussed, alongside with available opportunities, interventions and strategies to be taken into account by beneficiaries such as HEIs, industry, researchers and educators. Increasing women and underrepresented groups participation in STEM research and industry is a key for the future, and inclusive equality needs to be promoted in careers through structural change in research organisations.

### 5. Appendix 1: Gallery





## International Network of Women Engineers & Scientists

INWES is a global network of organizations of women in STEM, with Organizational Members, Corporate Members, University Members, and Individual Members, all together representing about 250,000 women from over 40 countries worldwide.

*"To build a better future worldwide through full and effective participation of women and girls in all aspects of STEM"*



# La Contribution des Femmes en STEM dans la Recherche & Innovation dans la région MENA

Kawther Ilibidheb  
09 Avril 2022





## Indice Mondiale de l'Innovation Pôles scientifiques et technologiques

L'Indice mondial de l'innovation 2021 rend compte des performances des écosystèmes d'innovation de 132 économies et suit les tendances mondiales les plus récentes en matière d'innovation.



Source: Indice Mondial de l'Innovation 2021, OMCPI






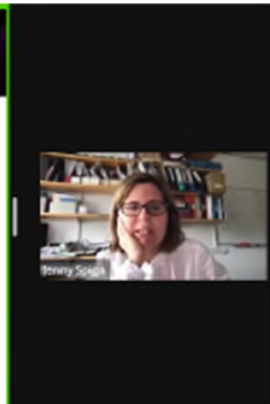
**S**ee your goal  
**U**nderstand the obstacles  
**C**reate a positive mental picture  
**C**lear your mind of self doubt  
**E**mbrace the challenge  
**S**tay on track  
**S**how the world you can do it



You are viewing Jenny Spiga's screen View Options

## AGENDA

- 9:00. Welcome - INWES Europe Chair Dipl. Ing. Sylvia Kegel
- 9:10. Introduction to the project - Dr Jenny Spiga – Moderator
- 9:15. Introduction to INWES - Prof Jung Sun Kim – INWES President
- 9:20. She figures in the EU – Prof Colette Gullope
- 9:40. History of women in the UK – Dr Nina Baker
- 9:50. Where is the gap – Prof Manjit Dosanjh
- 10:00. German experience for more women in STEM – Christina Haaf M.A.
- 10:10. Disabled students at UPM – Prof Isabel Carillo Ramiro
- 10:20. Women in STEM in France – Prof Colette Gullope
- 10:30. Panel and open discussion

### WOMEN AND CLIMATE DISRUPTION

Why the impacts of climate disruption are not gender-neutral

Women account for **70%** of those living below the poverty line!

Worldwide, **62 million girls** aren't in school!

Disparities in education limit women's access to information and vocational options, constraining their ability to adapt. With education, girls are better able to engage in environmental decision-making in households and beyond.

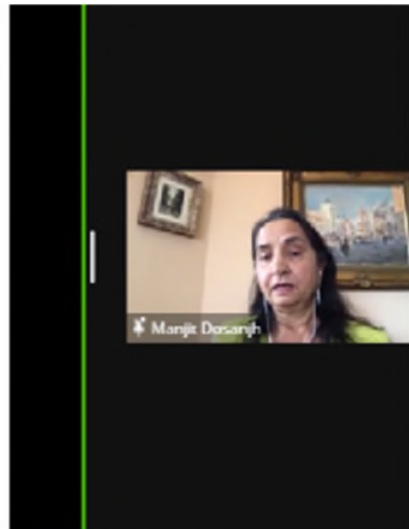
Poverty compromises one's ability to recover from natural disasters, compensate for agricultural losses due to climate disruption, and take care of one's family needs.

Women and children are **14 times** more likely to die than men during natural disasters\* when mortality due to climate disruption.

**Women own just 1% of the world's LAND**

When women secure rights to land efforts to tackle climate change are more successful, and climate response is more equitable. Without legal ownership, women often cannot make decisions about ways to conserve land, ensure agricultural productivity, or prepare their home for disaster.

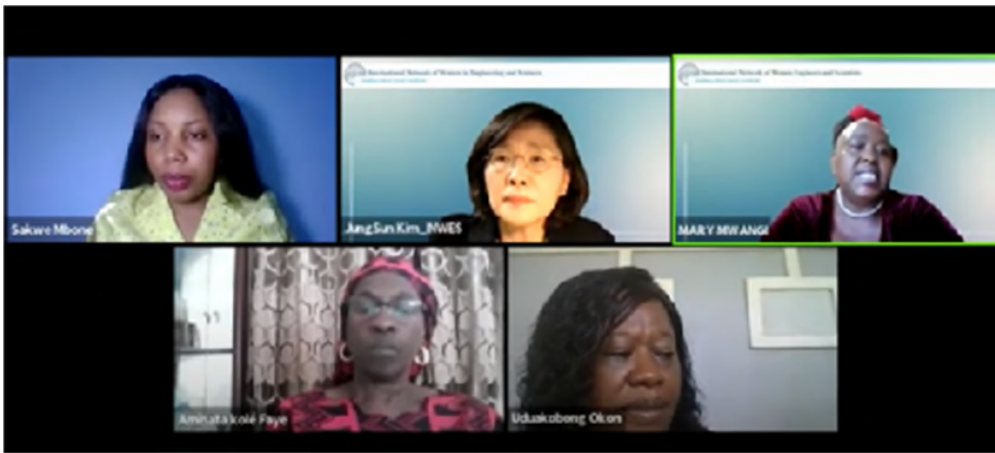
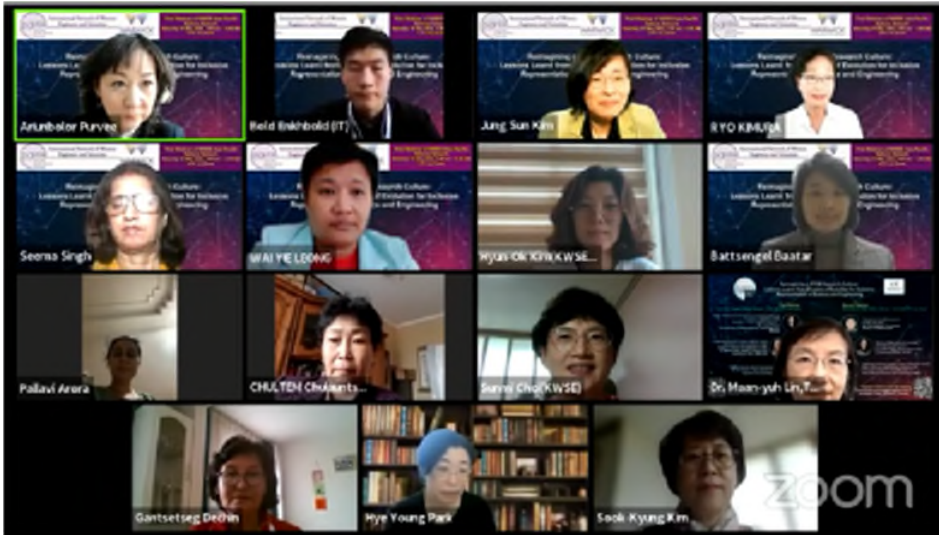
\*World Bank, World Development Report 2010: The 2010 Report on Development. © 2010 World Bank. Cambridge, MA: MIT Press. 2010. 2010. 2010.

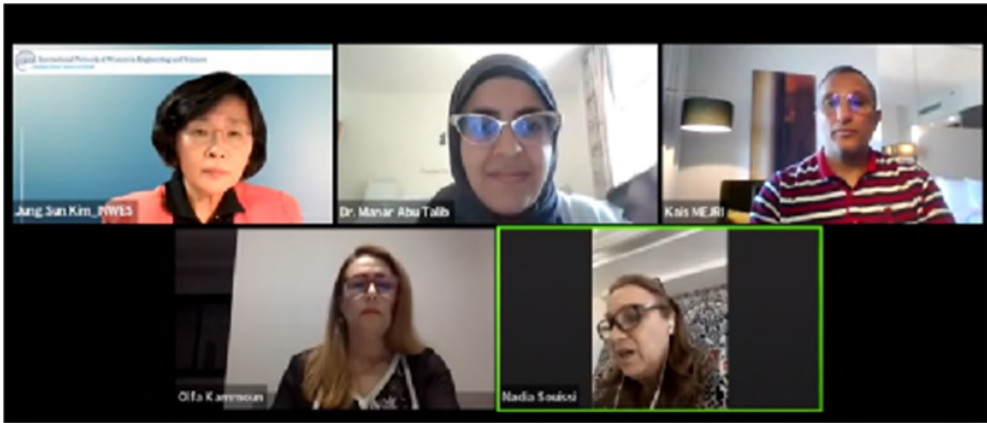
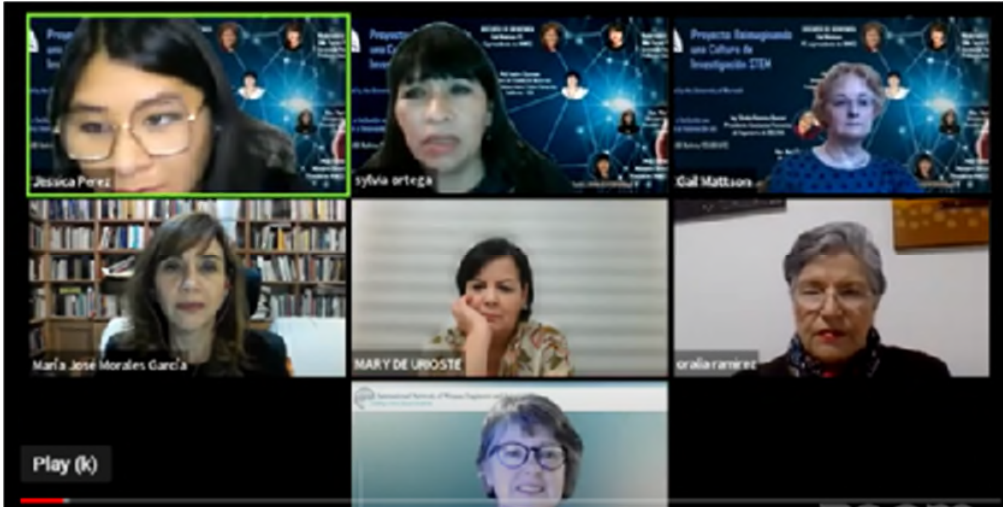


## Our efforts to correct unconscious bias

- Introduction of role models
- Delivery lecture / experiment classroom
- Publication of booklets and DVDs
- STEM introduction event, tour
- Exchange meeting with STEM
- others









**The European Union: What Policies and Measures Have Been Efficient? On the Examples of France, Germany, Portugal, Switzerland**

*Colette Gullopé*  
**European Platform of Women Scientists**

*femmes et mathématiques*  
**Femmes & Sciences**  
*Université Paris-Est Créteil*

*Europe Regional Network Webinar*  
*INWES and University of Warwick*



**SHE FIGURES 2021**  
 Statistics and Indicators  
 in a 'chronological journey'

*Colette Gullopé*

2nd Regional Webinar INWES Europe:  
 Reimagining a STEM Research Culture  
 29 June 2022

**Achievements from grassroots – where is the horizon?**



Panagiota (Betty) Rouni, Mechanical Engineer, PhD.



- Lecturer, Mechanical Engineering School, National Technical University of Athens (NTUA),
- Member of Gender Equality Committee of NTUA





**INWES Colaboración**

- INWES cree fuertemente en colaboraciones para compartir recursos y ampliar el alcance para todos nuestros miembros:
- Estableció memorandos de entendimiento con WFEO (Federación mundial de organizaciones de ingeniería) y WSFS (Federación mundial de organizaciones de trabajadores en las ciencias), Mothers in Science y trabaja con otras organizaciones mundiales
- Se asocia con corporaciones para llevar a cabo capacitaciones en desarrollo profesional y diversidad e inclusión
- Organiza, conjuntamente con otras, eventos de divulgación STEM para motivar a más niñas y sus padres

Gal Mattson



## 6. Appendix 2: Photo Montage

All participants were asked to provide a photograph of themselves, ideally holding up a piece of paper with a word that represents this project for them, in the style of a hashtag (for example '#network'). Here is the result, with more photos to be added when available:



Find out more at [https://warwick.ac.uk/fac/sci/eng/research/enhancing\\_research\\_culture/](https://warwick.ac.uk/fac/sci/eng/research/enhancing_research_culture/)