



ISSUE 18 - JANUARY 2015

MEMBER NEWSLETTER

PRESIDENT'S MESSAGE

Dear members of INWES

Happy New Year! 2015 is the Year of the Sheep - an animal who, as well as being warm and peaceful, is known for having a strong mind! I hope it brings you luck, and you all have a happy and effective year!

I would like to take this opportunity to thank all of you for making 2014 a great year for INWES. Our triennial meeting, the 16th International Conference of Women Engineers and Scientists (ICWES16) - with the theme of "global exchange for change" - took place in conjunction with WE14, the annual conference of SWE. From the 23rd to 25th of October 8,100 participants gathered in Los Angeles, USA, to make the conference a great success. Among them were 281 attendees from forty-six countries. I would like to express a heartfelt thank-you to all the participants and speakers, and the host organization SWE. In particular, I would like to express my sincere appreciation to the President of SWE, Elizabeth Bierman, for hosting ICWES16, and to Gail Mattson for serving as the organising chair of ICWES16. The success of the meeting was the fruit of the collaborative efforts of all the members and both Boards of Directors from SWE and INWES. Finally, I would like to acknowledge the twenty travel grants supported by UNESCO, Samsung, PNNL, BNL, EnergX, and our other sponsors.

We are happy to have celebrated the 50th anniversary of ICWES, which first started in 1964 in the USA, and it was exciting to return to America after fifty years. The INWES Board and helpful volunteers trawled through the archives and documents from a half century of ICWES, to present our 'her-story' at ICWES16. I am certain that all participants benefited from the bidirectional diversity at ICWES16. International members could experience the well-organized SWE spirit, while SWE members could learn about the many unique efforts and cultures of women in STEM worldwide. ICWES17, the next ICWES, was announced at the Annual General Meeting (AGM) and will be held in 2017 - hosted by the Indian WISE in Dehli, India.

In other exciting news, INWES initiated its second regional network at ICWES16. The African Regional Network (ARN) had their kick-off meeting on 22nd October during ICWES16, based on their steering committee organized by ten African countries. We look forward to more news from the ARN, which we are confident will be instrumental in fostering regional activities in Africa.

At the AGM held on 24th October - during ICWES16 - eighteen new board members were elected. The new President and President-elect were then elected by these new board members at the subsequent board meeting on October 25th. Among the new board, eight directors were newly elected and ten directors stayed on from the previous board. I am honoured to have been re-elected as the President and happy to announce that Liette Vassure from Canada was elected as President-elect; Joan Graf as Treasurer; Margaret Ajibode as Secretary General; and Gail Mattson, Marlene Kanga, and Roseni Dearden as Vice Presidents. The seven of us will serve as the Executive committee. I hope, with the help of the new directors, to continue to pursue our many activities with as much enthusiasm and success as our past directors made possible. We sincerely appreciate our previous members for their great contribution for INWES: former President Sue Bird for her wisdom and leadership over the past nine years, former President-elect Monique Moutaud for her tremendous efforts working with UNESCO to secure INWES travel grants and develop regional networks, former Secretary General Jung Sun Kim for her extensive efforts in bookkeeping and communicating for INWES, and Okon Uduakobong for initiating the African network.

2015 will be the start of a three year term for the INWES board. We have to make strategic plans so that INWES will have better visibility, especially among youngsters. We hope to add mentoring activities in addition to our regular conferences, for example. There will be a Regional conference in 2015, and the Asia Pacific Nation Network (APNN) meeting will be hosted in September by WSTEM in Ulaanbaatar, Mongolia.

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EVENTS

Engineers Australia ASEAN Engineering Conference
Singapore
11th - 13th March 2015

I look forward to having more of you involved in INWES activities; and hope that both individually, or as part of organisations, you will continue to be empowered through the INWES network. I also welcome any suggestions and ideas at any time of the year. INWES will try, as always, to support you as much as we can.

We hope this world becomes more peaceful by pursuing collaboration rather than competition.

We hope this world becomes sustainable by producing new knowledge.

We hope this world becomes a gender-equal place through straightening what is skewed.

We hope this world becomes rich enough to offer the next generation a hopeful life through sharing resources.

I hope to have another good year with you to work together and make changes for a better world.

Warm regards,

Kong-Joo Lee, Ph.D.
INWES President

INWES MEMBER NEWS

WES AWARD FOR YOUNG INSPIRING ENGINEER LUCY ACKLAND, UK

Young engineer Lucy Ackland, who works for Renishaw - a world-leading engineering technologies company in Staffordshire, England - has been awarded the Women's Engineering Society (WES) prize for her groundbreaking work in 3D-Printing.

She received the award at the prestigious IET Young Woman Engineer of the Year Awards Ceremony which took place in London on 10th December 2014. The Young Woman Engineer of the Year Awards aim to find female role models to help address the UK science and engineering skills crisis.

Recognising outstanding female engineers has never been so important; recent statistics from the IET's Skills and Demand in Industry survey showed that women represent only 6% of the engineering workforce in the UK - the lowest percentage in Europe. Further IET research showed that only 1% of parents of girls were likely to encourage their daughters into engineering, compared to

11% for parents of boys.

Lucy said: "I'm so happy to have won this award - it means a lot to be recognised for the work I do in a really exciting, upcoming industry. I'm pleased to be considered a role model for future generations of female engineers because I believe engineering is a really enjoyable career choice but sometimes people are put off by misleading stereotypes."

Michelle Richmond, IET Director of Membership, said: "The lack of women in engineering is a very significant problem, contributing to skills shortages which damage the economy. The shocking reality is that the UK is missing out on half of its potential engineering and technology workforce by failing to attract women into the industry. It also means that women are losing out on interesting and rewarding career opportunities."

"The difficulty in attracting women into engineering in the UK is down to a combination of things: from the careers advice girls are given in schools, to schools not instilling girls with the confidence to opt for science and maths at A-level, through to employers needing to do more to make their approach to recruitment

and retention more female-friendly. But it's also a result of the lack of inspirational engineering role models for girls - which is where our Young Woman Engineer of the Year winners can play a vital role."

Dawn Bonfield, WES President, said: "The Women's Engineering Society is delighted that this award goes to Lucy Ackland, who has already done an enormous amount to engage and inspire the next generation of female engineers. We are looking forward to working with Lucy this year to do even more for young people, and crucially their parents, in changing stereotypes of the engineering sector and especially of the apprenticeship route into engineering. Congratulations Lucy."

Chris Pockett, Head of Communications at Renishaw plc. said: "We are very proud of what Lucy has already achieved during her engineering career with Renishaw and her tireless work, often in her own time, to promote STEM-based careers to young people. The WES Prize is fantastic national recognition of this work and we know that she will continue to be a great ambassador for the engineering sector over the coming years."

Women's Engineering Society (WES), UK

POSITIVE EXPERIENCES AT THE YOUNG WOMAN SCIENTIST CAMP

When women are not given equal opportunity to contribute to science, technology and engineering (STEM) a country denies itself its full complement of scientific minds. This was the key message shared by Dillip Pattanaik, a founding member of Women in Engineering India, at the 2014 APNN & MAPWiST conference held in Seoul, South Korea earlier this year. We were given the opportunity to attend this conference as participants at the Young Woman Scientist Camp.

Dillip's message highlighted the critical importance of increasing

women's presence in traditionally male-dominated STEM fields. The conference highlighted the severe underrepresentation of women in these fields in the Asia-Pacific region. Although countries like New Zealand and Australia are leading the way in women's representation there is still a lot of work to be done. As a Chemical Engineering and a Computer Science student, we were no strangers to the difficulties faced by women in these fields, but the conference gave us a clear, and rather daunting, insight into just how much adversity women face in these fields in other countries. However, it also highlighted the vast number of people and organizations working to improve this situation, and many of their approaches were discussed.

The active recruitment of women to science and engineering at a high school level has certainly raised enrolments in science and engineering based courses. However, this does not necessarily translate to more women completing degrees and being employed in these fields, and will not alone 'break the glass ceiling' and allow more women to progress to management level. Marlene Kanga from Australia presented statistics and the underlying issues creating this "leaky



pipeline” of women leaving the STEM field. Marlene highlighted sexual harassment and inflexible working environments as major deterrents for women looking to begin or continue a career in science and engineering.

This conference started many conversations about these topics. Talking about these issues is a crucial part of fighting them, and these conversations were all the more meaningful when young engineers and scientists, just beginning their careers, are able to be a part of them. It was hugely valuable that so many young women were invited to attend as part of the Young Woman Scientist Camp. One day of the conference was devoted to this camp, which provided us with a platform to further discuss these problems, and create valuable connections with other young women in STEM.

The overall conference theme was a call for change across all countries in the Asia-Pacific region. Women need to be actively encouraged into roles in science and engineering and the “leaky pipeline” effects decreased to reduce the number of women who move, or are actively pushed out, into other careers. In many cases the change needs to be driven by not only female representatives of these industries but their male counterparts as well. It was an eye opening experience to meet with and hear from women, ranging from undergraduates to University

professors, from so many different countries and backgrounds.

Women have the ability to provide industry with a full complement of scientific minds through their ideas, experience, and different ways of approaching and solving problems. Gender diversity across all industries needs to be encouraged and the sooner that this reality is recognised the earlier these industries can make progress toward reaching their full potential. The opportunity to attend this conference allowed us to see how progress towards this goal is being achieved and how much we, as young women in STEM and the future leaders in this field, have to offer. It was a truly inspiring and humbling experience and we hope other New Zealand and Australian students will have the opportunity to attend in the future.

Caitlin Duncan and Chanelle Gavin
Institution of Professional Engineers New Zealand (IPENZ)



WISE NEPAL THRIVES AS NEW INWES MEMBER

WISE Nepal emerged and developed as a voluntary network in 2013, with one goal: “Better prospects for women scientists and engineers in Nepal through their active involvement and participation”. It became an official member of INWES in 2014.



Its immediate objectives are:

1. For women scientists and engineers in Nepal to be able to take advantage of increased networking and knowledge sharing opportunities for their professional development in science and engineering

related fields.

2. For women scientists and engineers in Nepal to be able to raise their voices together for women-friendly policies in their workplaces.

With nine young women engineers as executive members of the board, the network members include more than a hundred engineers and scientists practicing in different institutions such as universities, NGOs, INGOs, government services and some bilateral and multilateral donor agencies.

Some of the executive members of WISE Nepal participated in the Young Women Science Camp in 2013 and 2014, and the Asia Pacific Nations Network and MAPWist conference held in Korea in 2014. These events have provided them with opportunities to understand and exchange experiences between women engineers and scientists across the regions. It also helped them learn how to become leaders and role models to support the engineering profession for fellow women engineers. A paper on the promotion of social inclusion in engineering, by the WISE Nepal chair, was



chosen for presentation at the International Conference for Women Engineers and Scientists - ICWES 16.

Members of WISE Nepal have advocated within the institutions they are working with to encourage affirmative actions to include more women engineers within their workforces. They continue to lobby for the promotion of internship programmes for new female engineering graduates, which get them involved in different engineering projects and help them gain the confidence to enter into the engineering job market, as well as offering paid full-time employment in engineering for successful interns.

WISE, Nepal

ONE YOUNG WOMAN'S EXPERIENCE AT THE YOUNG WOMAN SCIENTIST CAMP IN KOREA

In the summer I had the opportunity to attend the 2014 Young Woman Scientist (YWS) camp held at the Ewha Women's University (Seoul, South Korea), thanks to the support of Dr Marlene Kanga of Engineers Australia, and the Association of Korean Women Scientists and Engineers (KWSE). The YWS camp offered the twenty-two international and fifty-six Korean-based young women participants the opportunity to interact and network with other women researchers in science, technology, engineering, and mathematics (STEM), working throughout the Asia-Pacific region. This year, the YWS camp was run concurrently with the biannual 2014 Asian & Pacific Nation Network (APNN) meeting and the Meeting of Asia and Pacific Women in Science and Technology (MAPWiST). Consequently, the YWS attendees were allowed the opportunity to participate in key events surrounding these meetings and to gain professional insight from the more senior participants of these other forums.

On the first day of the YWS camp the international attendees were given the opportunity to travel to the Korean Institute of Science and Technology (KIST) and Changdeokgung Palace. A tour through the KIST Gallery showcased the impressive scientific achievements accomplished during almost fifty years in operation.



The visit to the active KIST laboratories offered us a glimpse into the cutting-edge research currently being conducted at the Institute, including research into catalytic technology and quantum dots. After trying the local cuisine for lunch, we enjoyed a tour of the beautiful Changdeokgung Palace - a chance to appreciate the rich culture and history of Korea.

The APNN meeting began on the second day with the presentation of progress reports for each of the participating Asia-Pacific countries. The reports highlighted both global and region-specific issues surrounding the participation of women in STEM. A key issue identified in the Australian progress report

presented by Dr Marlene Kanga was the "leaky pipeline" syndrome. Research showed that although a promising percentage of women enter STEM at undergraduate level, the percentage of women working in these areas drops off rapidly with seniority and maturity. The "leaky pipeline" is a serious problem that is often masked by the relatively high percentage of female graduates in STEM. The report recognised that only once



the "leaky pipeline" and all contributing issues are tackled can Australia fully harness all the scientific talent available and reach its full research potential.

On Thursday, the YWS camp attendees were divided into small groups and asked to develop a poster presentation. The diversity of cultures, different stages of life, and areas of professional interest in my group made for a lively discussion and an interesting presentation on the obstacles and possible solutions to retaining a good life-work balance as a woman in STEM. Friday began with a small group mentoring session for YWS attendees, which allowed YWS attendees the opportunity to benefit from the experience of the more senior MAPWiST attendees and share their concerns within an intimate group setting. In the afternoon the poster sessions gave the YWS participants a chance to share their research interests with other attendees.

The YWS camp was an extremely positive experience, which highlighted the challenges associated with working towards gender equality in STEM and inspired me to be involved in instigating change. The camp taught me a great deal, while also giving me the opportunity to create lifelong professional and personal friendships with international scientists and engineers.

Emily Hyde
Engineers Australia

WIES BANGLADESH HOLD CONSULTATION ON WOMEN IN ENGINEERING AND SCIENCE

Women in Engineering and Science (WiES) Bangladesh, a member organization of INWES, was created in June 2014 to act as a voice for women in science, technology, engineering, entrepreneurship and mathematics; and help develop and promote women's social and economic potential.

Recently, the President, Ms. Siddika Sultana, and founder, Dr. Shahriar Hossain, along with many WiES members met with Mr. Dillip Pattanaik, Vice-President of WISE India and representative of INWES in Dhaka. They discussed their bid to host a regional conference for INWES in Dhaka in 2015 to promote women in science and engineering regionally and globally.

Shortly after this meeting, WiES Bangladesh conducted its first consultation meeting on 29th November 2014 in Dhaka with the slogan "LEAD, INSPIRE, EMPOWER". A large group of women who were interested, studying, or specialists in science, technology, engineering, entrepreneurship or mathematics attended.

The consultation consisted of four parts: a short presentation, a documentary, a speech from the President, and an open discussion. The presentation informed the participants about the objectives, mission, vision, major focuses, and proposed

activities of WiES Bangladesh. The documentary demonstrated how female engineers designed and developed toys for girls which can make them interested in engineering fields. Then, in the open discussion led by Dr. Shahriar Hossain the participants shared their views on the situation of Bangladeshi women in these fields. They discussed how women are shaped to be typical girls in Bangladesh and encouraged to be concerned about their beauty rather than qualifications. They discussed ideas about how to break the barriers created within society which

The participants suggested that newspapers and social media should cover more stories on such pioneering women, which can help motivate women to stand up to the societal and cultural barriers they face in Bangladesh, and lead to the recognition of women for their hard work, merit and intelligence, rather than just their beauty. Ideas for encouraging more female involvement in STEM included increasing the number of science teachers, creating a more participatory education system, and introducing more study hours in labs. The need to improve career



deprive them of opportunities to get engaged to fields related to science and engineering and compete with their male counterparts.

Ms. Siddika Sultana, President of WiES Bangladesh, wanted girls in Bangladesh to be inspired by the many girls in these fields in India and elsewhere, who are stepping forward amidst violence and discrimination.

opportunities in science-related fields in order to encourage girls to choose science as their majors at higher levels of education, was also raised. The consultation was over with a vote of thanks by the host organization (ESDO). After the consultation all of the women participating signed up to become committed members of WiES Bangladesh.

WiES, Bangladesh

INSPIRING BOLD YOUNG WOMEN TO SPEAK UP AT ICWES

It was a privilege to speak at the 16th ICWES conference in Los Angeles.

Three years ago at ICWES15 in Adelaide, Australia, I promised myself that in 2014 I would be in Los Angeles, on that stage presenting something, anything, as a contribution to women in the engineering profession. Fast forward eight months from that point and I had corralled an extraordinary team and we had just completed our first event to inspire girls to change the world through engineering. We called it the Power of Engineering (see: www.powerofengineering.org).

Sharing our story at ICWES 16, my Power of Engineering Co-

Founder, Jillian Kenny, and I were like proud parents, talking about the scalability of the Power of Engineering programme, and how we had reached over 2,400 students across Australia through our one day workshops.

Presenting at ICWES enabled us to begin a global expansion. We received interest from several inspiring young women who offered to expand our workshops in their local cities - Los Angeles and Seattle. Like most young engineers they said "I always wanted to do something to inspire the next generation but didn't know what".

To say we were overwhelmed by the scale of the conference – especially the careers fair - is an understatement. With more than 8,000 attendees, we had never seen so many women engineers in one place. There are probably only a few more women engineers

in the whole of Australia! Within this giant room were thousands of young students and newly minted engineers, jostling for their position at company stalls and patiently waiting in line to get five minutes with an engineer or talent scout. But outside the large hall, in the ICWES conference presentations, we noticed that these young women were more difficult to find.

While the presentations, lightning talks and workshops were brilliant, there was a distinct lack of youth among those women who were bold enough to present their ideas. For once it wasn't the case for 'where are all the women' it was 'where are all the young engineers?'

As young engineers ourselves, we know that it's not because young women don't have anything of value to share. In fact, back in Australia, the first ever Engineers Australia National Convention was held at the end of November. To coincide with this event, a list of 'Young Leaders to Watch' - comprised of young engineers, who are making a difference in their fields today - has been released. Of the 20 young engineers who make up that list, 13 - that's 65% - are female!

Conferences like ICWES are essential for empowering all women in the engineering profession. We are both huge fans and have already thrown our hats over the wall to present again at ICWES17, in New Delhi, in another three years. For us, the next question has become 'How do we instill the necessary confidence in the young women in our

profession so they can trust in the value of their own ideas?'

We believe one way of getting more young women on the stage is to create opportunities for young women to speak up, and to clearly articulate that them being bold is a great contribution to the profession. Having young women involved in the conversation as speakers, on panels, and in front of the whole conference crowd will influence and inspire other young women. This will ensure that other young women in the audience will have the opportunity to be inspired by these role models, just like I was by the inspirational leaders at my first ICWES.

*Felicity Briody
Power of Engineering, Australia*



IMPORTANT AWARD AND BOOK LAUNCH FOR KENYAN RESEARCHER, MARY ABUKUTSA

This year Mary Abukutsa Onyango, a leading researcher in the study of African indigenous vegetables and fruit, won a Coveted Global Award in Edinburgh, UK. She also launched a book on the subject with the Food and Agricultural Organisation of the United Nations (FAO) in Australia.

Mary Abukutsa Onyango, a professor of Horticulture at Jomo Kenyatta University of Agriculture and Technology, won the prestigious 2014 Edinburgh Medal in April at the 26th Edinburgh Medal Ceremony. The award recognised her work for its combined scientific and social relevance. She has been searching for practical solutions to Africa's double burden of obesity and malnutrition, through research into sustainable production and utilization

of leafy African indigenous vegetables.

The cheers and applause she received, as she rose to collect the award at the 2014 Edinburgh International Science Festival, are a sign that Professor Abukutsa's research, which has spanned two decades, is finally getting the recognition it deserves. On collecting the award, she dedicated the medal to the millions of Africans living with various forms of malnutrition and diet-related illnesses: 'This is for all the people in the world who are struggling with malnutrition, and those facing death as a result of hunger.'

While making a speech for the don, Prof Louise Heathwaite, Scottish Chief Scientific Advisor for Rural Affairs and Environment, noted the immense contribution to health and nutrition Professor Abukutsa has made and its implications for human well being:

Her scientific research was described as "helpful in revealing the risks to global food security and how we can leverage ...

traditional African crops to optimize health and nutrition, and reduce diet related diseases". Heathwaite praised Abukutsa for drawing attention to a different model of scientific thinking and decision making - one that "promotes indigenous plants as reliable sources of nutritious foods."

Professor Abukutsa has dedicated her life and work to leafy traditional vegetables whose potential, she believes, can be harnessed to economically empower Kenya's rural poor, as well as alleviating nutrition-related conditions like anaemia, diabetes, certain cancers, and cardiovascular disorders. However, she acknowledges that farming and consumption of the nutrient-dense vegetables in Africa remains very poor due to a number of cultural, technical and agronomic factors.

"Many Kenyans consider the indigenous vegetables as weeds, a result of colonial mindset that placed exotic species above local ones. Our studies have instead

confirmed that African vegetables have great competitive advantage compared to exotic ones," Abukutsa told the Edinburgh Festival gathering.

The academic added that the traditional crops like amaranths, jute mallow, and spiderplant are also easy to grow, tolerant to drought, resistant to diseases, and quick to mature. Abukutsa believes these qualities can be exploited to give impetus to African economies, while cushioning global population from hunger and malnutrition.

Due to her research and advocacy, a number of African leafy vegetables are now available in supermarkets in Kenya and beyond. Agriculture curricula at JKUAT and Maseno Universities also have units on the local vegetables. Furthermore, the botanic garden at Maseno university is now home to over 200 species of endangered African plants, including indigenous vegetables, which have been

nurtured by Abukutsa.

The researcher has now set her eyes on establishing a research centre to address the indigenous vegetables' value chain. She believes the venture would be instrumental in providing quality seeds and spreading appropriate farming practices to grass roots farmers in Africa, as well as offering value addition and marketing services for the commodities.

The Edinburgh Award is the latest addition to Abukutsa's long list of awards and accolades by local and international individuals and institutions. She is an Elder of the Order of the Burning Spear, and was declared the African Union Top Woman scientist in Earth and Life Sciences in 2010. She becomes the second African



woman to receive the coveted Award. The other recipient was the late environmentalist and Nobel Laureate from Kenya, Professor Wangari Maathai.

"We must all do something. It may not be on African vegetables; it can be on Scottish traditional vegetables! All the little things we are going to do will add up to make human life better, for science is at the heart of what we do," concluded Professor Abukutsa to a standing ovation.

AWARD PRESENTED TO INWES BOARD DIRECTOR AT GRACE HOPPER CELEBRATION 2014

Durdana Habib, recently elected to the INWES Board of Directors, was presented the Change Agent Award at the Grace Hopper Celebration of Women in Computing (GHC) 2014. The event was live-streamed by the organizers. Durdana has been actively involved with INWES since its inception in 2002. She has served two terms on the Board of Directors from 2005 to 2011.

GHC is the world's largest gathering for women technologists. It is organised by the Anita Borg Institute (ABI), and presented in partnership with the Association for Computing Machinery (ACM), to support the research and career interests of women in computing and encourage their participation. Dr. Telle Whitney, co-founder of ABI, welcomed the attendees at the opening ceremony and invited Alex Wolf, the President of the Association of Computing Machinery (ACM) to give opening remarks. The conference was held in Phoenix, Arizona on 8th to 10th October 2014. Among the participants were 8,000 women from about sixty-seven countries and representatives from about 900 organizations, there to get inspired, gain expertise, get connected, and have fun.

The conference theme this year was "Everywhere. Everyone". Computer technologies are everywhere and everyone should be

included for driving innovations. There were multiple technical tracks featuring the latest technologies in many fields such as cloud computing, data science, security, and Swift Playgrounds Programming language by Apple. Conference presenters represented many different fields, from within academia, industry, and government. The non-profit organization "Computing

Research Association Committee on Women in Computing (CRA-W)", also offered sessions targeted towards academics and business.



An hour-long panel moderated by Dennis Whittle, President of The Whittle Group and Executive Chairman of Ashoka Changemakers, took place on 10th October. During the panel, the ABI Change Agent Award winners were interviewed about how they became involved with careers in technology. The audience was invited to put questions to the award winners towards the end. A career fair was launched alongside the conference. The career fair was a great forum for facilitating open conversations about career positions in industry and academia. Many famous companies, such as Google, Facebook, Microsoft, IBM,

Yahoo, Thomson Reuters; as well as universities such as, Stanford University, Carnegie Mellon University, The George Washington University, and the Georgia Institute of Technology; and non-profit organizations like CRA-W were present to discuss opportunities for women.

WOMEN ENGINEERS CONTRIBUTE TO NEW UN FRAMEWORKS AT WFEO

Women engineers made an active contribution to the meeting of the World Federation of Engineering Organisations (WFEO), held at UNESCO, Paris in December 2014. WFEO is the leading body for the engineering profession and

brings together engineering institutions from more than ninety countries, representing more than 20 million engineers.

The annual WFEO meetings are an opportunity to discuss global issues which involve engineering and to influence decision-makers in the area of engineering education, sustainable development, ethical standards in engineering, and natural disaster resilience.

One important project at WFEO concerns the United Nations Sustainable Development Goals (SDG), which will come into effect next year. In 2015 three new United Nations frameworks will replace the Millennium Development Goals (for global development), the Kyoto Protocol (for action for climate change) and the Hyogo Framework for Action (for natural disaster risk mitigation).

WFEO is supporting the development of

WOMEN ENGINEERS DAY HELD IN ARGENTINA

A Women Engineers Day with a focus on “Diversity and Inclusion for Engineers in the Region” was held in parallel with the recent regional ENGINEERING 2014 Congress for Latin America and the Caribbean, which took place from the 3th to 6th November 2014. The day was organized by the Women Engineers’ Commission of Engineers Argentina (CAI). It was chaired by Olga Cavalli and included over 120 participants.



Important topics were discussed such as the gender gaps in engineering which exist at every stage - from youth entry to professional career progression, and promotion to senior management and decision-making positions. The workshop concluded that stereotypes and social factors, which persist in industry and engineering environments, continue to have a significant impact on the gender gap.

Concrete cases were considered and analyzed, with diverse evidence-based solutions explored, such as: quotas which could be implemented within organizational processes at each stage of human resources planning, actions to mainstream gender in all labor policies, innovation in public administration, and major business enterprises leading by example. Project recommendations such as building specific mentoring programs and leadership training focused on women empowerment were also brought to the workshop.

Questions were raised within discussions that made clear the ambitious scale of the task we have ahead of us:

- How do we measure and prove that diversity and inclusion generate more income, business, and value to society in general and the engineering field in particular?

- How do we achieve better gender balance in all work groups and business processes? And how do we motivate leaders in these groups so they generate a more gender-balanced environment?

- Given that engineers are an expensive resource for businesses, how can we induce companies to value human capital even more and reduce the pay-gap between men and women (currently at around 24%)?

- Large and international companies seem to offer rules for a better inclusion and more professional equality: how can we accomplish this in small and medium enterprises (SMEs)?

- Governments can help enforce change once equality policies are in place, but how can we persuade them to go from vision to action?

- What are the possible solutions for childcare when fathers and mothers both work at the same time?

Finally, the issue of who we attract to engineering and science, and how, was discussed.



Creating a new work environment may rely on attracting young people who are aware of inclusion as a social issue, and who are interested in realising a different image of an engineering and technical society: one which is more modern, more equal, and more inclusive.

The discussion recognised the importance of being able to not just articulate an image, but also “measure what we treasure” by assessing strategic indicators. A key conclusion and recommendation of the day was that identifying indicators to assess the situation is of utmost importance when it comes to mainstreaming, advocacy, and demonstrating credibility in gender issues.

Yvette Ramos and Olga Cavalli

these new frameworks, through experts from member countries, to ensure that engineering perspectives are included in these important statements. It has established connections at the highest levels to ensure that engineering input is recognised.

There are seventeen goals under discussion at present, and these will be further consolidated as discussion progresses during 2015. Importantly, objectives for women are recognised in two key areas:

Goal 4 - Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

Goal 5 - Achieve gender equality and empower all women and girls.

Both these goals are of vital interest to women engineers and scientists. In an increasingly technological world, it is important that women and girls have equal access to education, and to technology that empowers their lives and enables an active contribution to the economy.

Some of the sustainable development goals to be achieved by 2030 under Goal 4 include free, equitable, and quality early childhood, primary, and secondary education leading to effective learning outcomes. Another aspiration is equal access for all to affordable quality technical, vocational, and tertiary education, including university. It is hoped

that realisation of this aspiration will result in more women studying science, engineering and mathematics around the world. This aspiration is also supported by another related objective - to have more teachers in these fields with additional facilities for teacher training. Scholarships for students from developing countries - in particular LDCs (less developed countries), SIDS (small island developing states) and African countries - to enrol in higher education, including vocational training, ICT, technical, engineering and scientific programmes, in developed countries and other developing countries are also to be encouraged.

Goal 5 captures the aspiration that all forms of discrimination against all women

THE BIRTH OF THE AFRICAN REGIONAL NETWORK

The African Regional Network (RNA) was finally set up under the auspices of the International Network of Women Scientists and Engineers (INWES) in October 2014. Its creation has been a long journey fraught, with pitfalls that have been overcome by the determination, commitment, and ambition of women scientists and engineers in Africa.

ARN was initiated at ICWES 16 + SWE 14 in Los Angeles, USA, as ICWES celebrated its fiftieth anniversary. It is the result of the efforts and far-reaching vision that began in 2001.

In 2001, in Lusaka, Zambia, UNESCO organized a conference on science education for girls. A workshop was devoted to the creation of an African network of women scientists and engineers (RAFESI - Réseau africain des femmes ingénieurs et scientifiques).

After the inaugural General Assembly, the second General Assembly was held in Bamako, Mali. Aminata Elizabeth OUEDRAOGO BANCE of Burkina Faso was elected President and the late Ngoya DER SYLLA of Senegal, Secretary General. Unfortunately, despite the efforts of those involved RAFESI has struggled to get off the ground.

In Lille, France, on July 17th 2008, at ICWES 14, another group of women scientists and engineers - ten in total - met at a meeting organized by the then INWES Vice President, Monique Moutaud, and signed a statement which outlined a plan to set up INWES - Africa. These women were: Yvonne Issie Gueye (CIFISATS - ROI), Nadia Ghazzali (Canada - African Diaspora), APWEN (Nigeria), WSE (Zimbabwe), Geneviève Mwayuli (AWSE - Kenya), Rosebella Maranga (AWSE - Kenya), Tasokwa Kakota (WS - Malawi), Clementine Tsikuakua (Congo), Feue Ngoya Der Sylla (Senegal), Victoria Njuki (WESTU - Uganda).

In October 2008 the mandate was given to the then Director of Francophone Africa, Yvonne Issie GUEYE, to organise an

inaugural conference. The conference took place in Abidjan from 23rd to 25th April 2009, and twelve countries from the continent were represented.

Earlier, in January of the same year, meetings were held in Lome, Togo, and Abidjan, Cote d'Ivoire. In 2011, in Adelaide, Australia, a meeting allowed African women to discuss how they could set up the African network. Another meeting in New Delhi, India, in 2012, moved the process forward.

The results of these efforts allowed the ARN to proceed with the formal installation of a Steering Committee chaired by Dr. Okon Aduakobong Anniebat of Nigeria. To strengthen the nascent network, Dr. Okon was invited to take part in the 2014 African Fair for Research and Innovation in Senegal (SARIS) in Dakar by AFSTech / Senegal.

Finally in October 2014, the ARN was born!

For the majority of the fifty-four countries in Africa, we now have a focal point for organising women engineers and scientists. This is the beginning of an African directory of female human capital in science and engineering.

African countries have been actively involved in INWES for a long time. In fact, the Republic of Côte d'Ivoire organized ICWES 8 in 1988 under the patronage of former Côte d'Ivoire President Houphouët Boigny.

However, we hope that, with the creation of the new network, women engineers and scientists in Africa will now be better able to connect with one another and work together in order to continue their important efforts. We want to create a sustainable continent through the promotion of a science and technology culture, in which women and men succeed together!

Rufina Dabo Sarr

President of AFSTech / Senegal

INWES Board Member and Director for Francophone Africa

President of the Advocacy Commission

and girls everywhere will be eliminated as well as all forms of violence against all women and girls in public and private spheres; child, early and forced marriage; and female genital mutilation. This goal also recognises the need to acknowledge and value unpaid care and domestic work through the provision of public services, infrastructure, and social protection policies, and the promotion of shared responsibility within the household and the family. This goal also recognises the importance of ensuring women's full and effective participation, and equal opportunities for leadership at all levels of decision-making in political, economic, and public life and for women's equal rights to economic resources, ownership, and control over land and other forms of property, financial services, inheritance, and natural resources. It is recognised that some national laws may need to be reinforced or reformed to achieve this goal. Women also need to be able to access and use enabling technologies, in particular information and communications technologies.

The WFEO Committee for Women in Engineering discussed these initiatives as well as their own projects relating to the data on Engineering Workforce Diversity, Leadership and Empowerment and Engineering Strategic Indicators. Plans for progressing these initiatives were discussed during the meeting.

WFEO is also active in other global engineering initiatives. With the growing importance of the internet and data sharing, it is working with the UN and other international organisations such as the Internet Governance Forum and the International Geographical Union to develop global data sharing principles.

Ensuring standards for engineering education is a high priority to enable engineers to travel and work around the world. WFEO is working with the International Engineering Alliance (IEA), and with national and regional professional engineering institutions, to develop approaches to improve engineering education. This is necessary intellectual infrastructure to underpin economic development.

The WFEO committee for ethical practice in engineering has developed a model code of ethics which is being adopted around the world. Engineers interested in fighting corruption in engineering projects have been successful in lobbying for an international anti-bribery standard, ISO37001. A British standard BS10500 had already been developed and was the model for the ISO standard. This standard provides a framework for a management system which militates against the risk of corrupt practices. The international standard is in the final stages of development and is expected to come into

effect in July 2016, enabling a systematic approach to corruption in engineering and all other sectors.

WFEO member nations with specialist expertise in environmental engineering have developed a Model Code for Sustainable Development as well as associated guidelines. These have been translated into seven languages and provide valuable guidance to engineers around the world in developing sustainable solutions. Environmental engineers are also working with the UN to address the SDG.

Natural disaster resilience is another hot topic, especially for developing countries affected by extreme weather events. Engineers from WFEO are working closely with the UNISDR, the agency responsible for natural disaster risk mitigation, and are making a contribution to the Sendai framework which will replace the Hyogo Framework from 2015 onwards. A web-based resource has also been developed to share knowledge on natural disaster resilience to build capacity in this area (see: www.wfeo.org/ndrm/)

*Dr. Marlene Kanga AM
Vice President of INWES
Engineers Australia National President 2013
Member of the WFEO Executive Council,
representing Australia.
For further information see www.wfeo.org.*

ICWES16 CONFERENCE

WEI4+ICWES16 was a huge success and record-breaking in several aspects. The partnering of the Society of Women Engineers (SWE) with the International Network of Women Engineers and Scientists (INWES) to host ICWES16 as a joint conference, resulted in over 8,300 attendees from forty-seven countries to Los Angeles for three days of professional development, networking and educational opportunities. This is a 15% increase in attendance for a SWE conference and seventeen more countries represented for an ICWES! The welcoming Ice Cream Social Wednesday evening gave attendees a chance to network and get creative with a costume contest that ranged from famous women to native dresses from around the world. The SWE and INWES Presidents jointly opened the

conference Thursday morning encouraging everyone to meet new people and learn about other cultures. Parallel SWE and ICWES Tracks totaling 302 sessions, twelve seminars/workshops and eight technical tours offered plenty of professional development opportunities. The Career Fair broke records with 515 booths sold and 303 corporations exhibiting and/or sponsoring. The

INWES and INWES ERI booth looked very professional with our new banners.

There was a lot of glimmer and recognition of outstanding women in STEM by both SWE and INWES at the banquets Friday and Saturday nights. Monique Frize, Ph.D. received the first

**A GLOBAL
EXCHANGE
FOR CHANGE**

[October 23 - 25, 2014] Los Angeles, California

INWES Lifetime Achievement Award for “significant accomplishments in the area of engineering and computer science; in encouraging women to study science, technology, engineering, and mathematics disciplines; and through continual guidance and support helping INWES to become a more effective organization around the world”. Jennifer S. Atchison, Ph.D., Sue Bird and Myung Hee Jung, Ph.D. received INWES Service Awards for their dedication and commitment to INWES, its mission, and growth of the organization.

Highlights of ICWES16 included the popular International Lounge where international and SWE members could meet and network as well as review the poster presentations; and view the ICWES

History display and banners celebrating the 50th Anniversary of International Conferences for Women and Scientists. For the ICWES Tracks, 202 abstracts were submitted from thirty-three countries; eighty-six speakers were selected for lectures, lightning talks or panels; and fifty-eight selected to present posters. Travel funds totaling US\$50,500 enabled INWES to support twenty speakers from thirteen countries.

INWES events included the last board meeting for the 2012-2014 Board of Directors, the charter meeting for the INWES African Regional Network, the Annual General Meeting with presentation of reports and election of the 2015-2017 Board of Directors, an informational meeting by the INWES Education and Research Institute, and then the first board meeting for the 2015-2017 Board. Looking to the future, INWES is excited to announce the acceptance of the proposal from WISE-India to host ICWES17 in New Delhi, India. As soon as the dates in 2017 and venue details are confirmed they will be advertised so you can start planning your participation.

Gail Mattson
ICWES16 Committee Chair



INWES AWARDS

INWES is a non-profit voluntary-based organisation and our work is made possible by the support and commitment of our members, who contribute in many different ways. The following awards recognise the exceptional contributions made by some of our members.

INWES Lifetime Achievement Award

Monique Frize, P.Eng. Ph.D.

For significant accomplishments in the area of engineering and computer science; in encouraging women to study science, technology, engineering, and mathematics disciplines; and through continual guidance and support helping INWES to become a more effective organization around the world.



INWES Service Award

*Sue Bird
Association of Noise Consultants*

For dedication to the International Network of Women Engineers and Scientists (INWES) and its mission; for continued guidance and leadership to the members; and for being a role model to all INWES board members as we continue the growth of the organization.



INWES Service Award

*Jennifer S. Atchison, Ph.D.
INM - Leibniz Institute for New Materials*

For significant contributions to the International Network of Women Engineers and Scientists (INWES); in particular, organizing legacy materials from INWES history and International Conference of Women Engineers and Scientists (ICWES) events to provide visual displays and exhibition materials for the 50th year celebration.

INWES Service Award

Myung Hee Jung, Ph.D.

Korea Institute of Science and Technology (KIST) Europe

In recognition of her unwavering commitment to the growth and vitality of the International Network of Women Engineers and Scientists (INWES) in providing resources for the December 2013 INWES board meeting at KIST Europe; the coordination of resources and support for the student interns in preparing the 50th anniversary materials; and for providing the intern project with guidance on how to effectively archive.



We want to extend a special thank you to these members and to all the other members whose contributions, big or small, help keep us thriving and growing as an organisation!

UPCOMING EVENTS

ASEAN ENGINEERING CONFERENCE SEEKING MORE WOMEN ENGINEERS

Engineers Australia is hosting the 3rd ASEAN – Australian Engineering Congress on Innovative Technologies for Sustainable Development and Renewable Energy - 11th - 13th March 2015.

The Conference will be held at Marina Bay Sands Convention Centre Singapore.

This congress presents an opportunity for pro-active discussion on sustainable solutions for economic growth and addresses issues such as climate change, depleting natural resources, and solutions to increasing energy demand, including renewable energy.

The organising committee would like to have more women

present at the conference.

The call for submission is available at:

<http://www.engineersaustralia.org.au/aaec-2015/call-abstracts>

The abstract needs to be around 100 words. It should summarise the proposed talk, as well as provide details about the author(s) and their organisation.

This is a great opportunity for women engineers and scientists in the ASEAN region to attend and present information on their organisations.

Marlene Kanga

Chair of the International Committee and National President 2013, Engineers Australia

THE NEW INWES BOARD

The new INWES Board is looking forward to working for the next three years with INWES individual members and organisations globally to support women in STEM everywhere!



ABOUT INWES

I. Executive Officers:

President: Kong-Joo Lee (South Korea)
President elect: Liette Vasseur (AFFESTIM - Canada)
Treasurer: Joan Graf (SWE - USA)
Secretary General: Margaret Ajibode (WES - UK)
Vice President: Gail G. Mattson (AAAS - USA)
Vice President: Marlene Kanga (Engineers Australia - Australia)
Vice President: Roseni Dearden (UK)

II. Other Board Members:

Durdana Habib (WESTIP - Pakistan, Central Asia)
Rufina Dabo Sarr (AFSTech/Sénégal - Senegal, French Speaking Africa)
Claudia Bergbauer (DIB - Germany, Western Europe)
Caroline Thoruwa (AWSE - Kenya, English Speaking Africa)
Ewa Okon-Horodyska (Individual - Poland, Eastern Europe)
Seong Ok Han (KWSE - South Korea, Far East Asia)
Kayoko Sugahara (INWES Japan - Japan, Far East Asia)

Aude Abena (AFISC - Cameroon, French Speaking Africa)
Sangeeta Wij (WISE-India - India, South East Asia)
Chia-Li Wu (TWiST - Taiwan, Far East Asia)
Yvette Ramos (Swiss Engineering - Switzerland, Western Europe)

Honorary members:

Dormer Ellis (Canada)
Joanna Maduka (Nigeria)
Kathleen Harer (USA)
Mahin Rahmani (Iran)
Monique Frize (Canada)
Nicole Becarud (France)
Renata Siemiens (Poland)
Issié Yvonne Gueye (Ivory Coast)
Claire Deschenes (Canada)

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INWES MEMBER NEWSLETTER

Deadline for Issue No. 19: 1st March

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