



World Federation of Engineering Organizations
Fédération Mondiale des Organisations d'Ingénieurs

50 YEARS OF ENGINEERING LEADERSHIP

Biennial Report 2017 - 2019



WFE0 Engineering 2030

A Plan to advance the achievement of the
UN Sustainable Development Goals
through engineering





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WFEO at a glance

The World Federation of Engineering Organizations (WFEO) was founded in 1968 under the auspices of UNESCO and is the peak body for engineering, representing nearly 100 nations and some 30 million engineers.

WFEO is the international voice of engineering, recognised by the United Nations as a leading non-government organisation in science and technology.

It works closely with UN agencies including UNESCO as well as the OECD, the World Bank and other international organisations in science and engineering to address key global issues, especially to advance the United Nations Sustainable Development Goals (SDGs) through engineering.

Major Initiatives

WFEO at the United Nations

WFEO co-chairs the major Science and Technology Group at the United Nations with the International Science Council. WFEO participates in the High Level Political Forums and holds side events annually in relation with the UN SDGs.

WFEO and Capacity Building for Engineering

WFEO is working with its international partners to increase the number and quality of engineers through engineering education standards, the development of national engineering education systems including accreditation bodies, registration and professional engineering institutions.

WFEO and the UNFCCC and COP meetings

WFEO attends the UNFCCC meetings annually and organises side events at the Conference of the Parties (COP) meetings to represent the engineering view on climate change.

WFEO and Diversity in Engineering

WFEO is active in supporting diversity in engineering including women and young engineers through attraction, retention and support programs and recognition awards.

WFEO and Africa and Small Island Developing States (SIDS)

WFEO is facilitating the development of engineering capacity in Africa and SIDS to support infrastructure growth, resilience against natural disasters and climate change impacts.

WFEO World Engineers Convention

This event is held every four years and is the “Olympics of Engineering”.

Report of the President



World Engineering Day for Sustainable Development – 4th March 2020 and beyond is a significant legacy of my term as WFEO President and will continue to raise the profile of WFEO for decades to come.

It has been an extraordinary privilege to serve as President of the World Federation of Engineering Organizations (WFEO) in 2017-2019, which included the celebrations of the WFEO's 50th year.

My presidency commenced with a commitment to our shared **vision** for WFEO – to be the internationally recognized, trusted leader of the engineering profession. I was also committed to a greater **voice** for the organization, higher **visibility** with the United Nations and its related agencies, including UNESCO, and a strong and financial **viable** organization. This was my election manifesto, and together, we have achieved much more than we thought was possible. The WFEO Biennial Report 2017-2019 showcases the achievements of our committees, members and partners in working together to advance the UN 2030 Agenda through engineering.

WFEO's celebrations of its 50th year in 2018, was an opportunity to look back and also ahead. We held stellar events at UNESCO Paris on 7 March 2018 and in London with a Gala Dinner on 20 October 2018. We produced a book on our history and two videos, one historical and one looking to the future of engineering and its impact on our world.

The most important achievements which have given WFEO great visibility and a voice at the highest international levels are:

1. The UNESCO Executive Board adopted a draft decision on 17 April 2019, recommending that the General Conference in November 2019 decide to proclaim 4 March of every year **World Engineering Day for Sustainable Development**. This will ensure that WFEO has a high profile for decades to come as it is also the founding day of WFEO.
2. The signing of the **UNESCO-WFEO Paris Declaration**, which declares the importance of engineering to advance the UN Sustainable Goals (SDGs), provides a powerful narrative on the impact and importance of engineering in advancing the 2030 Agenda. This led to very successful events that focused on some of the SDGs, a re-alignment of the work of the WFEO committees to advance specific Goals and a significant uptake of this vision by other engineering organizations including our national and international members.
3. Communication about the importance of engineering and sustainable development resulted in greater visibility at the United Nations, with a message from **the UN Secretary General Antonio Guterres** and a high profile at the **UN High Level Political Forum**. WFEO has been invited to contribute to a UN Guidebook on the role of science, technology and engineering in advancing national policies for sustainable development. I have authored a major chapter in the second **UNESCO Engineering Report**, that also demonstrates the impact of engineering on each one of the UN Sustainable Development Goals.



Marlene Kanga
WFEO President

The collective vision for WFEO was expressed in the **Engineering 2030 Plan** which was developed in consultation with our members and our international peers in science and engineering, bringing together government, universities, industry and professional engineering institutions.

We forged active partnerships with the **International Engineering Alliance (IEA)**, the **International Federation of Engineering Education Societies (IFEES)**, the **Federation of International Consulting Engineers (FIDIC)**, the **International Network for Women Engineers and Scientists (INWES)**, the **International Centre for Engineering Education (ICEE, UNESCO Category 2 Centre)** and the **International Science Technology and Innovation Centre for South-South Cooperation (ISTIC, Malaysia, UNESCO Category 2 Centre)**.

These partners are providing additional impetus for WFEO projects especially in reviewing standards of engineering education and continuing professional development of engineers and capacity building for engineering. We are ensuring that engineering is a diverse profession that provides opportunities for participation by all, irrespective of gender, ethnicity or age.

We need the best intellects to develop the essential solutions so urgently needed for sustainable development and in particular, we need to engage with young people so that they aspire to be a part of this dynamic, creative and innovative profession. The inaugural **Young Engineers Competition**, held in 2018, celebrated the achievements of our young engineers from around the world.

We engaged widely with international organizations including the **International Science Council**, with attendance at their inaugural General Assembly.



Speaking at opening of WEF2017 Conference, Rome, December 2017

We co-chaired the **Science and Technology Community Major Stakeholder Group** at the United Nations, providing comment on the **UN Global Sustainable Development Report**, to be released by the UN at its General Assembly in September 2019, and participating in the **Science Technology Innovation (STI) Forum** in June 2018 and May 2019 and **High Level Political Forum on UN SDGs**, in New York, July 2018 and July 2019.

We attended the **UNFCCC COP23 and COP24** meetings in December 2017 and 2018. We are working with the OECD on various integrity matters. We attended the General Assemblies of the **International Atomic Energy Agency** and **UNIDO** and attended meetings of the **World Meteorological Organization (WMO)** and **International Telecommunications Union (ITU)**. We are active in the **International Standards Organization (ISO)** Technical Committee on anti-bribery standards and the governance of organisations.

Four major WFEO Conferences were held during my term, all focusing on some of the UN Sustainable Development Goals.

- **Global Engineering Congress, London, 22-26 October 2018**, celebrating the 200th anniversary of Institution of Civil Engineers (UK) and the 50th anniversary of WFEO.
- **World Construction Forum, Ljubljana, 8-11 April 2019**, celebrating the 100th anniversary of the Ljubljana Engineers Chamber which became the Slovenia Chamber of Engineers and the 100th anniversary of the University of Ljubljana.
- **Engineering and Food Security Africa, Tunis, 24-26 June 2019**, hosted by the Order of Engineers Tunisia, the first time that WFEO has held a conference on this topic in Africa.
- **World Engineers Convention, Melbourne 20-22 November 2019**, held every four years, the "Olympics of Engineering" and celebrating the 100th anniversary of Engineers Australia.

Africa Engineering Week, the WFEO flagship event for Africa, was held in Mombasa, Kenya, in September 2018 and in Livingstone, Zambia, in September 2019.

Importantly, these events all led to significant outcomes and legacy activities which continue to engage engineers around the world on solutions for sustainable development.

WFEO also became a stronger and more financially viable organization with improved governance as a result of extensive reviews of the Constitution and the Rules of Procedures which address more efficient election procedures, recognition of committees that had been operating informally for many years, financial delegations, management of events including formal contracts, use of trademarks and logos, membership procedures and protocols for international representation of WFEO.



Addressing on the opening ceremony of the World Conference on Science Literacy, 17 September 2018



Speaking at the Institution of Engineers India Centenary celebration, Chennai, India, September 2019

We reviewed the representation of international members at the Executive Council, rationalized the membership categories and reviewed the member fee structure. The hosts of nine technical/policy committees were reviewed, with four renewals. This work load was progressed by structured decision making through 15 Executive Board meetings during 2018 and 2019, with full documentation of minutes and actions. More than 300 virtual meetings were held with Executive Board and Executive Council, UNESCO, committee members and the secretariat during the two years.

We welcomed more than 10 new members and associates and five major sponsors who supported our events and 50th anniversary celebrations.

I provided guidance for the redesign of the WFEO website and improved communications through 12 Newsletters with a message from me and I sent 14 letters to members, providing updates on activities and projects. Simultaneous interpretation in Spanish and French has been arranged for the 2019 WFEO General Assembly for the first time, for better member participation.

Our voice was heard and we had great visibility in the many international events where I was privileged to participate on behalf of WFEO. The work of the past two years has placed WFEO in a leadership position to put forward key position statements at the UN and internationally.

WFEO enables the world's engineers to come together - we have great strength and great opportunity to make a difference. My sincere thanks to the members of the Executive Board, Executive Council, Secretariat, committees, members and partners, who supported my presidency in 2017-19. I look forward to continuing to work with the members of WFEO, to progress the work that has begun for the benefit of the engineering profession and for a better sustainable world.

Dr. Marlene Kanga AM Hon. FIEAust Hon. FIChemE FTSE
WFEO President



At the WFEO 50th anniversary celebration, after signing WFEO / UNESCO Declaration, Paris, 7 March 2018

The following list of international engagements were an opportunity to raise the profile of WFEO at the UN, UNESCO, international agencies and member events.

- **Institution of Engineers India (IEI), Chennai, India**, National Engineering Congress, 21-23 December 2017.
- **Ordem dos Engenheiros (OdE Portugal), Lisbon, Portugal**, Portuguese Engineering in the International Context, 27-28 February 2019.
- **Instituto de la Ingeniería de España (IIE Spain), Madrid, Spain**, Challenges for Engineering: Contribution to SDG 6, 1 March 2018.
- **Fiji Institution of Engineers, (FIE), Suva, Fiji**, Sustainable Infrastructure, Successful Economy, 23-24 April 2018.
- **International Federation of Municipal Engineers (IFME), Suva, Fiji**, future international member of WFEO, 25 April 2018.
- **International Science Technology and Innovation Centre (ISTIC), WFEO Partner, Kuala Lumpur, Malaysia**, 10th Anniversary 2018, International Conference on Climate Change Education, 5-9 May 2018.
- **International Engineering Alliance meeting, London, UK**, activation of the MoU with WFEO and projects for engineering education standards and capacity building, 24-29 June 2018.
- **Institution of Civil Engineers (UK), London, UK**, preparations for GEC2018, 26 June 2018.
- **International Science Council (ISC), Paris, France**, first General Assembly, 3-5 July 2018.
- **OECD Paris, France**, meeting to discuss collaboration between WFEO and OECD on various integrity issues, 6 July 2018.
- **UNESCO Nigeria Delegation, Paris, France**, proposal for World Engineering Day, 5 July 2018, 13 Nov. 2018, 28 Jan. 2019, 2 April 2019.
- **UNESCO Mali Delegation, Paris, France**, Chair of Africa Group proposal for World Engineering Day, 6 July 2018.
- **WFEO STC CIC Seminar on Smart Cities, Ipoh, Malaysia**, Smart Cities for Sustainable Development, 12 July 2018.



Speaking at the UNESCO Member States presentation, Paris, January 2019

- **Federation of Engineering Institutions in Asia and Pacific (FEIAP) General assembly, Ipoh, Malaysia**, 12 July 2018.
- **Myanmar Engineering Council and Myanmar Engineering Society, Yangon, Myanmar**, 24-25 August 2018.
- **China Association of Science and Technology (CAST), Beijing, China**, World Conference on Science Literacy, 17-19 September 2018.
- **International Centre for Engineering Education (ICEE), Tsinghua University, China**, 18 September 2018.
- **Africa Engineering Week (AEW), Mombasa, Kenya** and inaugural African Women Engineering Forum, 17-21 September 2018.
- **UNESCO Engineering Report II, Paris, France**: Member of the Advisory Committee, November 2018 - November 2019.
- **UNESCO and World Engineering Day proposal, Paris, France**: Meetings with the UNESCO Secretariat and the UNESCO member delegations from Nigeria, Mali, Gabon, China, Zimbabwe, Australia, Namibia July 2018 - November 2019.
- **UNESCO STEM and Gender Advancement (SAGA) Project, Final Report, Paris, France**, 15 November 2018.
- **WFEO Presentation to UNESCO Member States from Africa, Paris, France**, the first time WFEO has engaged with these delegations on its work, 31 January 2019.
- **WFEO Presentation to UNESCO Member States, Paris, France** the first time a presentation has been made to UNESCO member states, 1 February 2019.
- **WFEO Extended Board meeting and World Construction Forum, Ljubljana, Slovenia**, Building and Infrastructure Resilience, and Declaration, 6-11 April 2019.
- **UNESCO Executive Board meeting, Paris, France**, to present World Engineering Day, 11-12 April 2019.
- **International Engineering Alliance, Hong Kong, IEAM2019**, 9-11 June 2019.
- **Meeting Hong Kong Institution of Engineers, Hong Kong**, 11 June 2019.
- **Engineering and Food Security EFS2019, Tunis, Tunisia**, Conference and Declaration, 24-26 June 2019.
- **United Nations High Level Political Forum, New York**, Engineering and SDGs, 8-12 July 2019.
- **Inaugural Ceremony of Centenary Celebrations of Institution of Engineers India, Chennai**, 13 September 2019.
- **Africa Engineering Week, Livingstone, Zambia**, and second Women in Engineering Forum, 15-21 September 2019.
- **150th Anniversary of Order of Engineers Portugal, and Civil Engineering Summit 2019 (CES2019), Lisbon, Portugal**, 24-27 September 2019.
- **World Engineers Convention, Melbourne, Australia**, 20-22 November 2019.
- **WFEO meetings and General Assembly, Melbourne, Australia**, 18-24 November 2019.



Attending the WFEO 50th Anniversary event Order of Engineers (OdE), Lisbon, February 2018

Report of the President-Elect



In the following years, I will devote myself to enhancing the leading role of WFEO in the world engineering community and delivering better services to its member.

As President-Elect, I have worked closely with President Marlene Kanga and the Executive Board to fulfill the mission of the Federation in order to promote WFEO Engineering 2030 Plan, in particular by focusing WFEO activities on UN Sustainable Development Goals, and laying emphasis on engineering capacity building for sustainable development.

To enhance the role of WFEO as world engineering leader in UN agenda is a strategic goal of the federation. On behalf of WFEO, I have actively participated in a number of important UN meetings, such as the annual **High-level Political Forum (HLPF)** and **Science Technology and Innovation (STI) Forum** in the UN headquarters in 2018 and 2019, the 46th board meeting of **United Nations Industrial Development Organization (UNIDO)** in 2018, and made a keynote speech at the Mobile Learning Week of **UNESCO** and its Artificial Intelligence conference in 2019.

I will engage more with UN sustainable development activities to make voices of engineering and recover and enhance the cooperation relationship with UN departments and agencies such as **United Nations Department of Economic and Social Affairs (UNDESA)**, **International Telecommunication Union (ITU)**, **United Nations Environment Program (UNEP)**, **United Nations Development Programme (UNDP)**, **Food and Agriculture Organisation (FAO)**. Together with other colleagues recommended by WFEO, I have also reviewed the draft of this year's Global Sustainable Development Report by UN Secretary General from the engineering aspect, part of my review suggestions were accepted.

Engineering capacity building is the key for engineering society to contribute to implementing SDGs.



Gong Ke
WFEO President - Elect

Assisting to Marlene Kanga and the WFEO Committee on Engineering Capacity Building (CECB), I have engaged in organizing series of activities on capacity building in Beijing, New York, London, and Hong Kong with our strategic partners such as the **International Engineering Alliance (IEA)**, **International Federation of Engineering Education Societies (IFEES)**, **European Network for Accreditation of Engineering Education (ENAE)** and our national and international members. I will further these works to keep WFEO's leading role in promoting international standards of engineering competence.

To fulfill my duty to improve WFEO services to its members, I have actively attended important events organized by **Federation of Engineering Institutions of Asia and the Pacific (FEIAP)**, **Federation of African Engineering Organizations (FAEO)**, **European Federation of National Engineering Associations (FEANI)** as well as by national members such as the **Order of Tunisian Engineers (OIT)**, **Engineering Institution of Zambia (EIZ)**, **Hong Kong Institution of Engineers (HKIE)**, and others.

I am going to attend events organized by **Union of Scientific and Engineering Associations (USEA)** and **Institution of Engineers India (IEI)**. I will do my best to further strengthen the support of WFEO to our members, and make more effort to facilitate cooperation between members and Standing Technical Committees and with enterprises. In past years, efforts have also been made to establish collaboration with **Organisation for Economic Co-operation and Development (OECD)**, **Institute of Electrical and Electronics Engineers (IEEE)**, and others to outreach WFEO influence.

At Plenary Session on Goal 7 at the UN High-level Political Forum, New York, July 2018



Addressing at UN Science Technology and Innovation (STI) forum, New York, May 2019

Recognizing the impacts of emerging technologies such as Artificial Intelligence (AI) and Big Data and others to future engineering, WFEO has intended to address these emerging technologies. I have actively engaged myself in several worldwide influential events, including the World Intelligence Congress, the World Robot Conference, the UNESCO's AI conference, to increase the visibility of WFEO.

I have led a working group on engineering ethics under the WFEO Committee on Engineering for Innovative Technologies (CEIT), which has drafted "Big Data and AI Principles in Engineering" to promote the responsible conduct of their application and innovation in engineering.

In the coming years, more documents with worldwide influence from the Standing Technical Committees and Policy Implementation Committees of WFEO, in cooperation with partner organizations, especially with leading industrial corporations, should be released to support the development of engineering profession and relevant policy-making on global topics such as climate change, environment protection and recovery, energy, food and water security, gender equity, disaster risk management, the 4th industrial revolution and innovative technologies, ICT, and engineering ethics.

The World Engineering Day for Sustainable Development proposed by WFEO will be proclaimed by UNESCO; this significant progress gives us a good opportunity to celebrate every year on March 4, the birthday of WFEO, to recognize the contribution of engineering to the human life and its key position in global sustainable development.

I will fully engage myself in organizing the inauguration of the World Engineering Day in 2020 and make best efforts to establish relationships with leading industrial corporates in major engineering fields to promote engineering profession with our members together.

Prof. Dr. GONG Ke is an Electronics Engineer with expertise in Information Communication Technology, and more than 30 years' experiences in engineering education, research, and management. Since 2009, he has engaged himself in WFEO activities and contributed his efforts and experiences to the development of WFEO.

He was the chair of the Standing Technical Committee on Information and Communication (CIC) and continued as the chair of the Standing Technical Committee on Engineering for Innovative Technologies (CEIT).

Besides, as chairman of China National Committee of WFEO, he has organized and led Chinese engineers to actively participate in WFEO activities and given full support to WFEO's activities in China and worldwide.



At World Construction Forum, Ljubljana, Slovenia, April 2019

Report of the Executive Director



The two-year period ending with the General Assembly and WEC2019 Conference in Melbourne was an extraordinary ramp up period for the Federation, working on the world stage, raising its profile towards UN, UNESCO and other agencies, and being the global voice of engineering.

The Paris Secretariat, based at UNESCO premises, certainly had its part in this move, supporting the activities of President Marlene Kanga, President-Elect Gong Ke and other leaders of the Federation, and above all trying to serve WFEO members with the highest quality.

With a much-appreciated new website, WFEO has largely improved its presence on social networks and is now a trusted source of information not only for its members but also for many people and external organizations.

MEMBERSHIP & FINANCIAL SITUATION

On the proposal of WFEO Executive Council, the General Assembly gathered in Rome in December 2017 under the Presidency of Jorge Spitalnik took the decision to settle a new fee system for our members, open and transparent, referring to the UNESCO assessments table.

Thanks to our continuous efforts, we had the pleasure of welcoming more than ten new members and associates for two years, and we restored relations with others. We explored ways of receiving sponsorships and financial support for specific WFEO actions. Following these actions, and thanks to the positive conclusion of two legal cases, the financial situation showed a notable surplus in 2017 and 2018, and it should be the case for 2019.

HEADQUARTERS' ACTIVITIES

The Headquarters staff was stable during this period, with Executive assistant Théo Bélaud and webmaster Ivan Juiz's activities completed by part time accountant Isabelle Cafaro,



Speaking at the meeting of Africa member states, UNESCO, Paris, January 2019



Jacques de Méreuil
WFEO Executive Director

who helped us improve our financial and administrative management.

We continued to make great efforts to meet the requirements of the Federation's leadership and members' expectations in addition to the normal regular administrative tasks that they carry out.

The Secretariat was involved in the work of such Board committees as the Finance Committee, the Nominations Committee, the Awards Committee and the Governing Documents Committee. We also continued to work closely with Standing Technical Committees to follow up their work, coordinate their collaboration with international organizations like UNFCCC in Bonn, UN in New York and highlighted their actions to enhance the visibility of WFEO.

We also maintained continuous relations with our membership, welcoming a number of their representatives in our premises, and were involved in the organization of numerous events.

Our new legal counsel was decisive in the positive conclusion of two legal cases.

PROJECTS

WFEO 50th Anniversary, and in particular:

- The Symposium organized at UNESCO in March 2018: program, documents
- The 2018 WFEO Young engineers competition
- In 2019, the secretariat supported Marlene Kanga for the preparation of the WFEO History Book: gathering of archives, documents, editing

World Engineering Day project

- Preparation of documents, translations
- Continuous exchanges with the Namibian Delegation, and meetings with other Permanent Delegations: Nigeria, Mali, Gabon, Australia, China, France...
- WFEO declaration at the UNESCO executive meeting in April 2019

RELATIONS WITH MEMBERS

I travelled to Rome in 2017 and London in 2018 for the preparation of respectively the WFEO General Assembly and Executive Council meetings, and of course to participate in these events in December. I also had the opportunity to attend the 2018 Annual Convention organised by CIE, our member for Chinese Taipei.



Speaking at the Small Island Developing States (SIDS) meeting, Paris, November 2018

We helped in the preparation of the World Construction Forum held in Ljubljana, Slovenia, in April 2019, in parallel with the WFEO Extended Board meetings, and attended them. In 2018 and 2019, I went three times to Brussels, for meetings of the Europe Engineers Advisory Committee organised by our European international member FEANI. I also attended events and meetings of our French member IESF in Paris, and we helped them to organize their annual symposium at UNESCO in October 2017. The Secretariat supported the preparation of the EFS Africa conference held in June 2019 in Tunis which I attended. It was organized by our member OIT on the theme of "Engineering and Food Security", and we ensured in particular the sponsorship and participation from the World Food Program (WFP).

RELATIONS WITH UNESCO

Based in Paris, the Secretariat has an important role in maintaining and developing relations with UNESCO Secretariat, and with national Permanent Delegations to UNESCO.

We went on maintaining excellent relationship with Natural Sciences Sector at UNESCO, in particular with Assistant Director Dr. Flavia Schlegel until she left beginning 2019 - and her last official attendance was at the information meeting on capacity building in Africa we organized on 31 January. Her successor Dr. Shamila Nair Bedouelle, met with Dr. Marlene Kanga immediately after her appointment in April.

I met a number of times with the new Director of Science Policy and Capacity Building, Dr. Peggy Oti-Boateng, an engineer by education, and her staff.

We developed contacts inter alia with Communication and Information sector - meeting on 30 January 2019 with Moez Chakchouk, ADG in charge of Artificial Intelligence, with Marlene Kanga and Gong Ke - and with the Africa department, headed by Mr. Firmin Matoko, who inaugurated our 30 January event on Africa.

We prepared WFEO submissions for UNESCO awards, like the 2018 King Hamad Prize on "ICT and education".

The Secretariat organized with Marlene Kanga two important meetings with UNESCO:

- **30 January 2019:** Information meeting on Engineering in Africa, hosted by the Africa Group of UNESCO. Marlene Kanga, Gong Ke and other WFEO delegates including me made presentations
- **1 February 2019:** Information meeting on Engineering with Permanent Delegations. Marlene Kanga, Gong Ke and other WFEO delegates made presentations.

With the assistance of the Secretariat, UNESCO sponsored WFEO conferences like WEF2017 in Rome, GEC2018 in London, WCF2019 in Ljubljana, WEC2019 in Melbourne.

We regularly attended the UNESCO-NGOs General Conference that takes place every two years in December in Paris. With other international NGOs, the Secretariat was involved in the NGO-UNESCO hydrology project, ensuring the participation of four technicians from Senegal at a 3 weeks education program in 2IE School in Ouagadougou, Burkina Faso. The French Permanent Delegate sent a support letter to this initiative, which received a funding of USD 12,000 from UNESCO.

SOME OTHER PARTICIPATIONS

I spoke at a number of occasions during meetings organized at UNESCO:

- Information meeting on capacity building in science (October 2018)
- conference on IT and SDG (November 2018)
- brainstorming at UNESCO on capacity building in education on climate change (November 2018)
- UNESCO SIDS (Small Islands Developing States) Knowledge Symposium: I was invited to do a presentation on engineering and SDGs (November 2018)
- ISTIC forum on education to climate change (September 2019)
- IPL Symposium on Landslides, where I signed a partnership on behalf of WFEO (September 2019)

We helped in relaunching WFEO participation in various organizations, like OECD (visits with Marlene Kanga and Gong Ke), ISO, UNEP, UNIDO, WMO and UN offices in Geneva.

I was member of the Review Organizing Committee of the Global Sustainable Development Report (GSDR) to be published by UNDESA in sept. 2019, coordinating reviews by WFEO delegates.

Meetings were also held with ISC, International Science Council, with which WFEO forms the Scientific and Technological Communities Major Group to the UN. Together with President Marlene Kanga and Executive Vice-President Reginald Vachon, I attended the launch of the organisation in Paris, France, with their first General Assembly in July 2018.

COMMUNICATION

Thanks to our webmaster Ivan Juiz, the external website was re-designed to focus on WFEO's international leadership and activities with the United Nations and its agencies, and the advancement of the UN Sustainable Development Goals. An internal website was established for the Executive Board, Executive Council, Committees and members for improved record keeping.

We prepared banners for events, published a number of informative documents, in English but also in French, and in particular a new leaflet on our activities.

The Flash Info newsletter, edited 6-7 times per year, is sent to more and more readers from our membership, associates and friends, providing updates on activities and projects.

APPRECIATION

I am particularly grateful to President Marlene Kanga, President elect Gong Ke, other members of the Executive Board and the Executive Council, all WFEO members and of course the Secretariat team for their continuous support, guidance and assistance.

WFEO Executive Council

Executive Board

Marlene Kanga
President

Gong Ke
President-Elect

Jorge Spitalnik
Past President

Reginald Vachon
Executive Vice President

Crtoimir Remec
Executive Vice President

Seng Chuan Tan
Treasurer

Jacques de Méreuil
Executive Director

Committee Chairs – Vice Presidents

Abdul M. Alameddine
Education in Engineering

Jean Venables
Engineering & the Environment

Jing Peng (Acting TBC)
Eng. for Innovative Technologies

S.S. Rathore
Information & Communication

Zainab Garashi
Young Engineers / Future Leaders

Samuel Grossman
Energy

Valerie Agberagba
Women in Engineering

Martin Manuhwa
Anti-corruption

Jorge Alva Hurtado
Disaster Risk Management

Yashin Brijmohan
Engineering Capacity Building

Reginald Vachon
Chair WFEO UN Relations from Oct. 2018

National Members

Abdul Majeed Al Gassab
Bahrain

Vilas Mujumdar
USA

Ruomei Li
China

Ashok Basa
India

Haro Bedelian
UK

Khaled Chehab
Lebanon

Nicola Monda
Italy

Tomas Sancho
Spain
Chair WG on Water from Oct. 2018

International Members

Paul Jowitt
Commonwealth Engineers Council
(CEC)

Adil Al Hadithi
Federation of Arab Engineers
(FAE)

Julius M. Riungu
Federation of African Engineering
Organizations (FAEO)

José Manuel Vieira
European Federation of National
Engineering Associations (FEANI)

John Li
Federation of Engineering Institutions
of Asia and the Pacific (FEIAP)

Maria Teresa Pino
Pan American Federation of
Engineering Societies (UPADI)

Non voting Members

Mustapha Shehu
Chair Awards Committee

François Lureau
Chair Nominations Committee

Martin Van Veelen
Chair Working Group on Global
Infrastructure Report from Oct. 2018

World Engineering Day for Sustainable Development

A WFEO led initiative that will celebrate the founding day of the organization, 4th March, for all future years from 2020 onwards.



engineer".

World Engineering Day is an opportunity to engage with young people and say "If you want to make change for a better world - Become an

**Dr. Marlene Kanga,
WFEO President**



**WORLD
ENGINEERING
DAY** FOR SUSTAINABLE
DEVELOPMENT

WFEO proposed 4th March as **World Engineering Day**, the founding day of the Federation, as part of the 50th anniversary celebrations of the organisation in 2018. The proposal was led by Dr. Marlene Kanga WFEO President, who engaged with UNESCO and its member states to get the approval.

WFEO received some **80 letters of support** from peak international and national institutions, academies and national commissions to UNESCO, representing **23 million engineers around the world**.

The first stage of the decision was made on 17 April 2019 when the UNESCO Executive Board recommended unanimously to the UNESCO General Conference in November 2019, that they "decide to proclaim 4 March of every year World Engineering Day for Sustainable Development". The vote on this recommendation will take place in November 2019 at the UNESCO General Conference.

This resolution was backed by member states of UNESCO with support **from more than 40 nations** including: Namibia, China, Tanzania, Mozambique, Gambia, Equatorial Guinea, Zimbabwe, Palestine, Egypt, Tunisia, Uruguay, Senegal, Liberia, Nigeria, Turkey, Madagascar, Dominican Republic, Guatemala, Mali, Iraq, Gabon, Côte d'Ivoire, Ethiopia, Serbia, Saudi Arabia, Islamic Republic of Pakistan, Russian Federation, Poland, Kenya, Iran, Nicaragua, Oman, Bangladesh, France, Comoros Islands, Liberia, Jordan, Philippines and UK.

"Engineers aren't very good at articulating the value of engineering and the impact that engineers and engineering have on society. This is a wonderful opportunity to talk about these aspects and engage the community in the work of engineers", said Dr. Marlene Kanga.

An international day with co-ordinated celebrations across the world will be an opportunity to increase the profile of engineering and to gain media coverage for the events.

See www.worldengineeringday.net

Every Member and Associate is invited to celebrate World Engineering Day on 4th March each year.

Speech on World Engineering Day at UNESCO, 17 April 2019

Madam Chair, thank you for the opportunity to speak about the importance of World Engineering Day. I am the President of the World Federation of Engineering Organizations that originally developed this proposal and is committed to facilitating its success around the world. The Federation is the peak body for engineering with members from 100 nations comprising the professional engineering institutions of the world representing more than 30 million engineers. Our members are committed to supporting the Day annually. More than 80 institutions representing some 23 million engineers have provided letters of support.

Currently there is no day that celebrates engineering. This Day is an opportunity to engage with society - young people, especially girls, on the importance of engineering. Engineers are critical to advance the 2030 Agenda for sustainable development. We commend this decision that will enable focus on how engineering can create a better world.

**Dr. Marlene Kanga AM Hon. FIEAust Hon. FIChemE FTSE
WFEO President.**



The UNESCO Executive Board meeting, Paris, April 2019



WFEO President Dr Marlene Kanga at the UNESCO Executive Board meeting, Paris, April 2019

50th Anniversary - WFEO celebration

WFEO celebrated its 50th anniversary of its founding day on 4th March 1968 with a stellar symposium at the UNESCO headquarters in Paris followed by a social event at the UNESCO Fontenoy Building in Paris, on 7th March 2018.

A highlight was the signing of the Paris Declaration, by WFEO and UNESCO on our commitments to progress the United Nations Sustainable Development Goals through engineering. Mr. Douglas Nakashima, Chief of Section, Division of Science Policy and Capacity Building at UNESCO, represented the UNESCO Assistant Director General at our Symposium and signed this Declaration.

The event was a high landmark of co-operation with the signing of agreements with five leading international organizations in engineering including The International Centre for Engineering Education (ICEE), a UNESCO Category 2 Centre based in Tsinghua University, Beijing, the International Science Technology and Innovation Centre (ISTIC), a UNESCO Category 2 Centre based in Kuala Lumpur, the International Federation of Engineering Education Societies (IFEES), the Federation of International Consulting Engineers (FIDIC), and the International Network for Women Engineers and Scientists (INWES).

A video on the future of engineering, produced with the assistance of the national member from China, China Association for Science and technology (CAST), was released on the day.

We announced two new WFEO Awards, the Dr Zuheir Alami WFEO Award for Engineering Innovation, supported by Khatib & Alami and the WFEO GREE Women in Engineering Award, sponsored by Gree Electric Appliances Inc.

The event was sponsored by Sungrow Power Corporation and China Electric Power Technology Net, Beijing Zhongdian-Keneng Exhibition Service Co. Ltd and Prof. Haoyong Chen. Their support was invaluable to ensure a successful event.

The second major event was the Global Engineering Congress (GEC2018) hosted by the Institution of Civil Engineers (UK). The Congress was a sell-out success with 2500 delegates from 80 nations attending this event. The Congress focussed on five of the UN Sustainable Development Goals: Water, Energy, Innovation, Sustainable Development and Climate Change.

We were proud and delighted to receive a message of congratulations from UN Secretary General Antonio Guterres, which was read out at the opening ceremony.



Mr. Douglas Nakashima, Director Capacity Building Section, Natural Sciences Sector, signs the WFEO UNESCO Paris Declaration, 7 March 2018



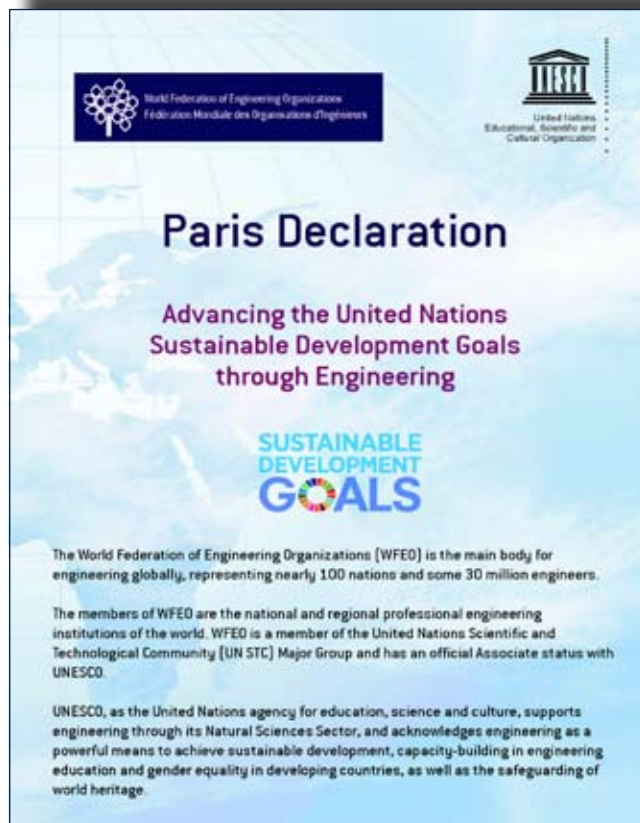
WFEO curated Days 1 and 2 (22 and 23 October), a showcase of WFEO activities and projects being undertaken by our technical committees, members and partners.

Nearly 90 WFEO nominated speakers from 40 countries spoke during these two days on a wide range of topics to address five of the UN Sustainable Development Goals: Water, Energy, Innovation, Sustainable Infrastructure and Cities and Climate Change. Important sessions were also held on diversity and inclusion and there was a special session for young engineers.

We held our 50th Anniversary Executive Board meeting on 20th October, our 50th Anniversary Executive Council meeting on 24th October and our 50th Anniversary Gala Dinner at the historic Great Hall in the Institution of Civil Engineers in London on 20th October, where the winners of the inaugural Dr Zuheir Alami WFEO Award for Engineering Innovation and the WFEO GREE Women in Engineering Award, were announced.

WFEO announced the winner of the inaugural Young Engineers Competition, and launched the publication of the best submissions. 6 of the 13 top laureates were present at the Gala Dinner to receive their certificates.

We were also proud to release the first report of the WFEO Engineering 2030 Plan which is a progress report on the work of our committees, members and partners in advancing sustainable development through engineering.



50th Anniversary - The Paris Declaration

Advancing the UN Sustainable Development Goals through Engineering, 7 March 2018

The World Federation of Engineering Organizations (WFEO) is the main body for engineering globally, representing nearly 100 nations and some 30 million engineers. The members of WFEO are the national and regional professional engineering institutions of the world. WFEO is a member of the United Nations Scientific and Technological Community (UN STC) Major Group and has an official Associate status with UNESCO.

UNESCO, as the United Nations agency for education, science and culture, supports engineering through its Natural Sciences Sector, and acknowledges engineering as a powerful means to achieve sustainable development, capacity-building in engineering education and gender equality in developing countries, as well as the safeguarding of world heritage.

Considering that:

1. In September 2015, the United Nations General Assembly adopted its Resolution 70/1 announcing the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs), which take an integrated approach to future development, combining progress in economic prosperity, social inclusion and environmental sustainability.
2. Engineers and engineering are critical for achieving the SDGs. Engineers have a key role in supporting the growth and development of essential infrastructures such as: roads, railways, bridges, dams, waste management, water supply and sanitation, energy and digital networks. They are responsible for developing and implementing technologies and systems that contribute towards achieving the SDGs as they relate to water, energy, environment, sustainable cities, natural disaster resilience and other areas, which will benefit people and the planet for greater prosperity and better quality of life.
3. WFEO is committed to playing a key role in leading and coordinating projects to achieve the SDGs through engineering. WFEO can bring together its members, educational institutions, government and industry to address the need for engineering capacity and the quality of engineers around the world and develop strategic frameworks and best practices for the implementation of engineering solutions for sustainable development. The national and regional members of WFEO, that are leading professional engineering institutions, will develop country and region-specific responses.
4. The celebration of WFEO's 50th anniversary in 2018 is a catalyst to develop a framework for an action plan for the engineering capacity that is required to achieve the SDGs. The Symposium held today, on 7th March 2018, is the first stage in bringing together the WFEO members and partners to develop the WFEO Engineering 2030 Plan.

Accordingly, we declare:

1. WFEO, a recognized member of the UN STC Major Group and UNESCO, through its Natural Sciences Sector, will work together and in cooperation with other UN organizations, including UNEP, UNFCCC and UNISDR towards achieving the SDGs through engineering.
2. WFEO and UNESCO are committed to the following principles for action through engineering to achieve the SDGs:
 - a. Increase the numbers and quality of engineering graduates that meet the needs of sustainable development with rapidly changing technologies, in collaboration with educators, government and industry;
 - b. Inform global standards for engineering education, support the development of a range of engineering education systems to comply with agreed standards and facilitate the mobility of engineers;
 - c. Support capacity-building through strong institutions for engineering education and the development of accreditation bodies for the recognition of professional credentials;
 - d. Establish policy frameworks and best practices, notably through WFEO Standing Technical Committees, as digital technologies, data sciences and artificial intelligence have ethical and social implications.

Signed in Paris, 7 March 2018



Dr. Marlene Kanga AM
WFEO President



a.i. Dr. Flavia Schlegel
Assistant Director General
Natural Sciences Division, UNESCO

50th Anniversary - Events and celebrations



Symposium – Progressing the UN Sustainable Development Goals through Engineering, 7 March 2018



WFE0 Past Presidents at the Social Event, 7 March 2018 - L to R: Jorge Spitalnik (2015-17), Marwan Abdelhamid (2013-15), Marlene Kanga (2017-19), Maria Jesus Prieto Laffargue (2009-11), Kamel Ayadi (2005-07), Dato Lee Yee Cheong (2003-05)



Signatories of the Cooperation Agreements with WFE0 - L to R: Prof. Wu Qidi ICEE, Ms. Sarah Peers, INWES, Dr. Hans Hoyer, IFEES, Dr. Marlene Kanga WFE0, Dato Lee Yee Cheong, ISTIC, Mr. Alain Bentejac, FIDIC, Prof. Yashin Brijmohan, WFE0, Ms. Hema Vallabh, WomEng



Executive Council Members, London, October 2018



WFE0 Executive Council Meeting, London, 24 October 2018



WFE0 50th Gala Dinner at the Global Engineering Congress, London, October 2018

Relations with United Nations

Statement from His Excellency UN Secretary General Antonio Guterres at the opening of the Global Engineering Congress (GEC2018), London, October 2018



UNITED NATIONS



NATIONS UNIES

THE SECRETARY GENERAL

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MESSAGE FOR OPENING OF GLOBAL ENGINEERING CONGRESS

London, 22 October 2018

I congratulate the Institution of Civil Engineers on its 200th anniversary. As one of the world's oldest such organizations, the Institution has made significant contributions to the development of the very infrastructure of modern life.

I also thank the World Federation of Engineering Organizations, which encompasses institutions from 100 nations and 30 million engineers, for its leadership of the profession internationally – and which is marking its 50th anniversary.

Both milestones demonstrate the important contribution that engineering has made to our economies and our societies. The United Nations will continue to count on your engagement and support as we strive to achieve the 17 Sustainable Development Goals – the world's blueprint for building a future of peace and prosperity for all on a healthy planet. Every one of the Goals requires solutions rooted in science, technology and engineering.

I am therefore pleased that the focus of this Global Engineering Congress is to advance the goals relating to water, energy, infrastructure and cities. Climate action is especially urgent; climate change is running faster than we are and I continue to stress the need to do what science demands before it is too late.

In this Year of Engineering in the United Kingdom, I thank you for your commitment to our shared objectives and offer all the participants in the Global Engineering Congress my best wishes for a successful event.

Relations with United Nations



The Global Sustainable Development Report was released in September 2019 by the UN Secretary general. The Report was produced by a group of eminent scientists from around the world.

The review of the Report was coordinated by the Department of Economic and Social Affairs of the United Nations (UNDESA), in collaboration with the International Science Council (ISC), the InterAcademy Partnership (IAP) and the World Federation of Engineering Organizations (WFEO).

The following reviewers were from WFEO members:

Wael R. **Abdulmajeed**, Iraqi Engineers Union;
Daniel **Favrat**, Ecole Polytechnique Federale de Lausanne, Swiss Society of Engineers and Architects;
Ke **Gong**, Professor, Vice-President, Chinese Institute of Electronics;
William **Kelly**, American Society for Engineering Education, United States of America;
Ania **Lopez**, Consiglio Nazionale degli Ingegneri, Italy;
Francois **Lureau**, Ingenieurs et Scientifiques de France;
Reine **Mbang Essobmadje**, Digital Coalition, Cameroon;
Vilas **Mujumdar**, American Society of Civil Engineers, United States of America;
Kazawadi **Papias Dedeki**, Institution of Engineers Rwanda;
Yvette **Ramos**, Swiss Engineering;
Črtomir **Remec**, The Housing Fund of the Republic of Slovenia, Slovenian Chamber of Engineers;
Jorge **Spitalnik**, Federação Brasileira de Associações de Engenheiros, Brazil;
Reginald **Vachon**, American Association of Engineering Societies, United States of America.

The review organizing committee included: Jacques de Mereuil (WFEO), Tracey Elliott (IAP), William Kelly (WFEO), Lucilla Spini (ISC), Teresa Stoepler (IAP), and Reginald Vachon (WFEO).



Plenary Forum on Science Technology and Innovation and the UN SDGs, during the High-level Political Forum on Sustainable Development, United Nations, New York, July 2019



WFEO president Marlene Kanga with Prof. Peter Messerli, Co-Chair of Group of Scientists that authored the Global Sustainable Development Report, United Nations, New York, July 2019

Relations with United Nations and its agencies

The World Federation of Engineering Organizations - UN Relations Committee (WURC) was formally recognised as a Policy Implementation Committee in October 2018, with the mission of engaging with the different UN agencies as well as intergovernmental organizations requiring engineering content, systems, methodologies and analyses. The committee has been active as a WFEO working group since 2011 and has enabled WFEO to contribute to the ongoing discussions at various UN agencies at the highest international levels.

WFEO is active in the United Nations as the Co-Chair of the Science and Technology Community of the Major Group of Stakeholders, with the International Science Council which is the other Co-Chair. WFEO representatives attend the Science Technology and Innovation Forum and the High Level Political Forums. A side event is held each year during these Forums on important issues relating to science, technology and engineering. WFEO has contributed to position papers on various aspects of engineering and sustainable development. WFEO also provided comment to the UN Global Sustainable Development Report (GSDR), released in September 2019.

WFEO is also active in other UN agencies including UNIDO, UNEP, UNFCCC. The WFEO Committee on Engineering and Environment has arranged side events at the Conference of the Parties (COP) meetings held each year. The WFEO Committee on Women in Engineering has also attended and participated in side events at the UN Commission on the Status of Women (CSW). President elect Gong Ke attended the UNIDO 46th Industrial Development Board Meeting in Vienna in 2018.



WFEO President Dr. Marlene Kanga with United Nations Under-Secretary-General for Economic and Social Affairs, head of UN DESA, Mr Liu Zhenmin, UN Headquarters, New York, July 2019



Member of UN Major Group for Scientific and Technological Community. Recognised as an ECOSOC accredited body



Associate Status, collaborates on engineering issues including education, diversity, water, natural disasters, capacity building



Contribution to the Conference of the Parties (COP) events to address climate change



Accredited organisation with contribution to various programs



Consultative status, contribution on engineering capacity building for social and economic development



Observer status and contribution to natural disaster risk mitigation through engineering



Observer status and contribution on energy and technology matters



Liaison organisation of international technical committee that is developing the ISO 37001 suite of anti-bribery standards



Collaborates on engineering and integrity relating to anti-corruption, data and artificial intelligence

Relations with United Nations and its agencies



Participation at the UNIDO 46th Industrial Development Board meeting, Vienna, 2018



Member of WFEO Executive Council Ruomei Li at the Commission on the Status of Women (CSW 63), New York, 2019



Darrel Danyluk (left), Engineers Canada, at UNFCCC COP24 Side Event, Katowice, Poland, December 2018

Relations with UNESCO

WFEO has been recognised by UNESCO since 1969 as an important non-governmental organisation with associate status to provide important advice in relation to engineering and for the implementation of UNESCO programmes.

WFEO has worked closely with UNESCO over the past two years on the development of the Second UNESCO Engineering Report. WFEO members and leaders have been authors and members of the advisory committee for the report.

WFEO and UNESCO have also worked together on key UNESCO priorities including the 2030 Agenda, Africa, Gender equality in engineering and the Small Island Developing States (SIDS). This report presents the highlights of activities in each of these areas. The signing of the Paris Declaration in March 2018 was a highlight of the engagement with UNESCO in the last two years and the joint commitment of the two organisations to advance the UN Sustainable Development Goals through engineering.

WFEO and UNESCO have worked closely on all events and conferences and there has been a UNESCO presence and patronage for all major events held during 2018-19. WFEO has had strong relationships with the Assistant Director General Natural Sciences Sector Ms. Flavia Schlegel, until 31 January 2019 and Ms. Shamila Nair-Bedouelle since then.

UNESCO Capacity Building Section, Natural Sciences Sector was a strong supporter of the proposal for World Engineering Day for Sustainable Development. We appreciate the support from Dr. Peggy Oti-Boateng, Director Capacity Building Section, Ms. Rovani Sigamoney, Assistant Programme Specialist and Mr. Zaid Angelos Haidar, Junior Consultant, for their support during 2017-19.



Ms. Flavia Schlegel, former Assistant Director General Natural Sciences Sector, UNESCO, with WFEO President Dr. Marlene Kanga



WFEO President Dr. Marlene Kanga with Ms. Shamila Nair-Bedouelle, Assistant Director General Sciences Sector and Dr. Peggy Oti-Boateng, Director Capacity Building Natural Sciences Sector, UNESCO, Paris, April 2019



WFEO President and UNESCO leaders Paris, January 2019



WFEO representatives and others at the inaugural meeting of UNESCO Second Engineering Report Advisory Committee, Paris, March 2018



WFEO Leaders with Dr. Peggy Oti-Boateng, Director Capacity Building Natural Sciences Sector, UNESCO, Paris, February 2019

WFEO in Africa

WFEO is committed to building capacity for engineering in Africa. The Abuja Declaration in December 2013 has been an important catalyst for capacity building in the continent. As a result the annual African Engineering Week, led by UNESCO, WFEO and the Federation of African Engineering Organizations (FAEO) has been important to bring together governments, universities, industry and engineering institutions to discuss important engineering issues to advance sustainable development.

WFEO also advanced its objectives to build capacity for more engineers with the right skills in Africa and to support the development of engineering education systems, accreditation bodies and professional engineering institutions in Africa with workshops held in London in October 2018 and at the annual meeting of the International Engineering Alliance in Hong Kong in June 2019.

WFEO also held a symposium for UNESCO member states from Africa at UNESCO Paris in January 2019. WFEO leaders from Africa - Eng. Martin Manuhwa, Eng. Valerie Agberagba, Eng. Mustafa Shehu and Eng. Papias Kazawadi Dedeki were key speakers.

Member states from Africa were also strong supporters of the WFEO proposal for World Engineering Day, led by Namibia, Nigeria and Zimbabwe.

As an international NGO with official partnership with UNESCO, WFEO is active in the multi-NGOs cooperation program on hydrology funded by UNESCO and launched in Yamoussoukro, Ivory Coast in 2014.

The program selects candidates from local NGOs projects in Subsharian Africa and enroll them in a taylor-made training session at 2IE Engineering School (Burkina Faso). Students from nine countries were already trained. WFEO was responsible for managing students from Senegal at the last session in 2019.



Poster for Africa Engineering Week 2018



WFEO President Dr. Marlene Kanga, President Elect Prof. Gong Ke, Executive Director Jacques de Méreuil, UNESCO Director Capacity Building Natural Sciences Sector Dr. Peggy Oti-Boateng and WFEO leaders from Africa at the meeting of Africa member states, UNESCO, Paris, January 2019



Chair of Committee on Women in Engineering Valerie Agberagba, President of Institution of Engineers Kenya, Collins Juma, President of Nigeria Society of Engineers Adekunle Mokuolu and FAEO Past President Mustapha Shehu at the UNESCO Africa Engineering Week, September 2018

WFEO in Africa



Speakers at International Engineering Alliance Forum on Capacity Building, Hong Kong, June 2019, which has an objective for capacity building in Africa and Asia.

L to R: Er Tan Seng Chuan, WFEO Executive Board member, Prof. David Holger, IEA Chair, Dr Michael Milligan for IFEES, WFEO President Marlene Kanga, Prof. Yashin Brijmohan, Chair WFEO Committee for Engineering Capacity Building, Prof. Damien Owens, President ENAEE Europe, Eng Martin Manuhwa, President FAEO and John Li, President FEIAP



The Mombasa Declaration, Africa Engineering Week, Mombasa, September 2018



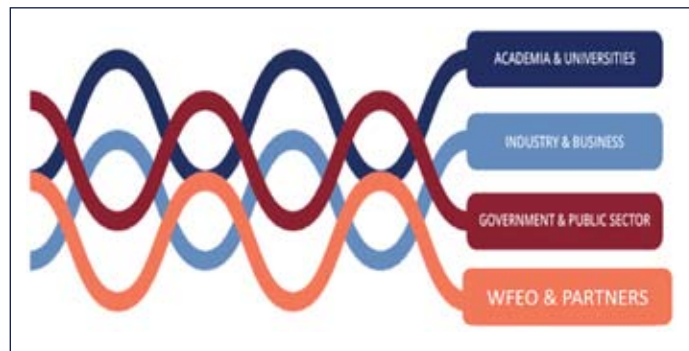
The Tunis Declaration, Engineering and Food Security Conference, Tunis, June 2019

WFEO Engineering 2030 Plan

WFEO has an imperative – a pressing need to step up and lead engineers to develop solutions for sustainable development.

Engineers and engineering is critical for achieving the UN Sustainable Development Goals. As the peak body for professional engineering institutions internationally, WFEO is committed to playing a key role in leading and coordinating projects to achieve the SDGs through engineering. WFEO can bring together its members, educational institutions, government and industry to address the need for engineering capacity and the quality of engineers around the world and develop strategic frameworks and best practices for the implementation of engineering solutions for sustainable development. The national and regional members of WFEO, that are leading professional engineering institutions, will develop country and region-specific responses.

The **WFEO Engineering 2030 Plan** activates the WFEO Strategic Plan, to be at the forefront of international efforts in engineering, in particular, to advance the 2030 Agenda for sustainable development. The Plan is based on a quadruple helix model of interaction between the professional engineering institutions that are the members of WFEO academia and universities, industry and business and government.



The partnership Model to Achieve the WFEO Engineering 2030 Plan

Each group has an important role:

The Professional Engineering Institutions: These are the members of WFEO who undertake specific projects through their own institutions and WFEO working groups and committees.

Engineering Educators – Universities, Technical Institutions and Associations: WFEO is working with universities, educational institutions, accreditation bodies and international organizations involved in engineering education to review existing engineering education standards and is building engineering capacity in countries in greatest need of engineers.

Industry Associations and large companies: WFEO will work with industry and industry associations in the engineering sector to mobilize employers to inform international standards for graduate outcomes and professional competencies.

Governments and Policy makers: WFEO will engage with governments and policy makers on policies for engineering capacity building and the science policy interface to implement technology solutions to advance the 2030 Agenda.



Every one of the UN Sustainable Development Goals requires engineering

The WFEO Engineering 2030 Plan has the following Principles for Action:

1. **Encourage young people** – to consider engineering as a career
2. **Graduate Outcomes** - agree international standards with educators, government, industry
3. **Professional Competencies** – international standards for mobility
4. **Partnerships** – with international standard setting organisations for consistent frameworks
5. **Support** – development of national engineering education systems to international standards
6. **Capacity Building** – for accreditation of engineering education and accreditation bodies
7. **Capacity Building** – for professional engineering institutions
8. **Develop professional development pathways** – so graduates meet employer needs
9. **Support national and international registration** – for recognition of qualifications and experienced of practising engineers and enhanced mobility
10. **Liaise with governments** – to establish consistent regulation policies for engineers
11. **Establish an international platform for engineering standards** – Education and professional development, under auspices of WFEO and UNESCO
12. **Report on progress** - to UNESCO and other international organisations

The 2017-19 Biennial report presents the progress being made and is the second report of the Engineering 2030 Plan. It covers the work of the WFEO Committees and Working Groups on specific engineering responses to advance the UN Sustainable Development Goals. It also reports on the work resulting from partnership with international organisations on engineering education standards and capacity building and on work being done by our national members and associates.

We also report on the focus on the UN Sustainable Development Goals in every WFEO conference that was held during 2017-19 and the outcomes and legacies of these events.

WFEO's focus has resulted in awareness of the role of engineering in Sustainable Development by the engineering profession and many organisations have also now taken up this positioning. The Second UNESCO Engineering Report also has a focus on engineering and the Sustainable Development Goals.

Standing Technical Committees



Committee on Disaster Risk Management (CDRM)



Committee on Energy (CE)



Committee on Engineering Capacity Building (CECB)



Committee on Engineering and the Environment (CEE)



Committee on Education in Engineering (CEIE)



Committee on Engineering for Innovative Technologies (CEIT)



Committee on Information and Communication (CIC)

Policy Implementation Committees



Committee on Anti Corruption (CAC)



Committee on Women in Engineering (WIE)



Committee on Young Engineers / Future Leaders (YEFL)



WFEO-UN Relations Committee (WURC)

Working Groups



Working Group on Global Infrastructure Report (WGGIR)



Working Group on Water (WGoW)

Committee on Disaster Risk Management (CDRM)



The WFEO Committee on Disaster Risk Management (CDRM) is a motivated team of engineers that work voluntarily for the development and strengthening of a worldwide network of scientists and engineers, who deal with hazardous natural phenomena, in order to reinforce the various processes of Disaster Risk Management.

**Jorge A. Hurtado,
Chair of CDRM (Since 2017),
Peruvian Engineers Association**

SUSTAINABLE DEVELOPMENT GOALS

11 SUSTAINABLE CITIES AND COMMUNITIES



- Encourage WFEO national members to establish their national disaster risk management committees which will be a network for the exchange of information and experiences;
- Design an international platform for online courses in disaster risk management, with the aim of promoting capacity-strengthening programs.

The Committee on Disaster Risk Management (CDRM) recomposed its membership, incorporating a group of new members under the host and leadership of the Peruvian Engineers Association (CIP), Peru. The Committee has focussed on discussion and knowledge exchange on the reconstruction process after natural disasters.

A major activity was the 12th International Symposium on Disaster Risk Management, held in Lima in September 2018 and which had the theme: "Reconstruction Towards Resilient Cities", which is related to UN Sustainable Development Goal #11. Outstanding speakers for the meeting, from within the WFEO community and beyond, resulted in setting of a network of professional contacts, specializing in different aspects of the reconstruction process.

There were 700 attendees from 9 countries and representatives from the public sector, Peru's regional and municipal governments, academia, the private sector, and the general public. Case studies of post-disaster reconstruction originating from the experiences of China (2008 Wenchuan Earthquake), Haiti (2010 Earthquake), Colombia (2010-2011 La Niña Phenomenon) and United States (2005 Katrina Hurricane) were presented.

Thematic sessions covered Regulations and Planning, Research, Technology and Infrastructure, Economy and Project Management, Institutional and Social Linkages, and Capacity-Building for Resilience. The Symposium ended with the reading of the conclusions of the technical workgroups and the Lima Declaration for Resilient Cities.

Speakers included land planners, geoscientists, architects, building engineers, economists, and educators among other disciplines. Their profiles, including name and expertise, are being published in the Experts' Platform of the committee web page.

This platform will grow with the participation of other experts from around the world, dealing with other processes (risk assessment, vulnerability, risk reduction, preparedness, early warning, etc.), willing to share their knowledge among peers. The objective of this group is to provide opinion about key aspects of disaster risk management, through live or on-line forums and debates, or direct consultation.

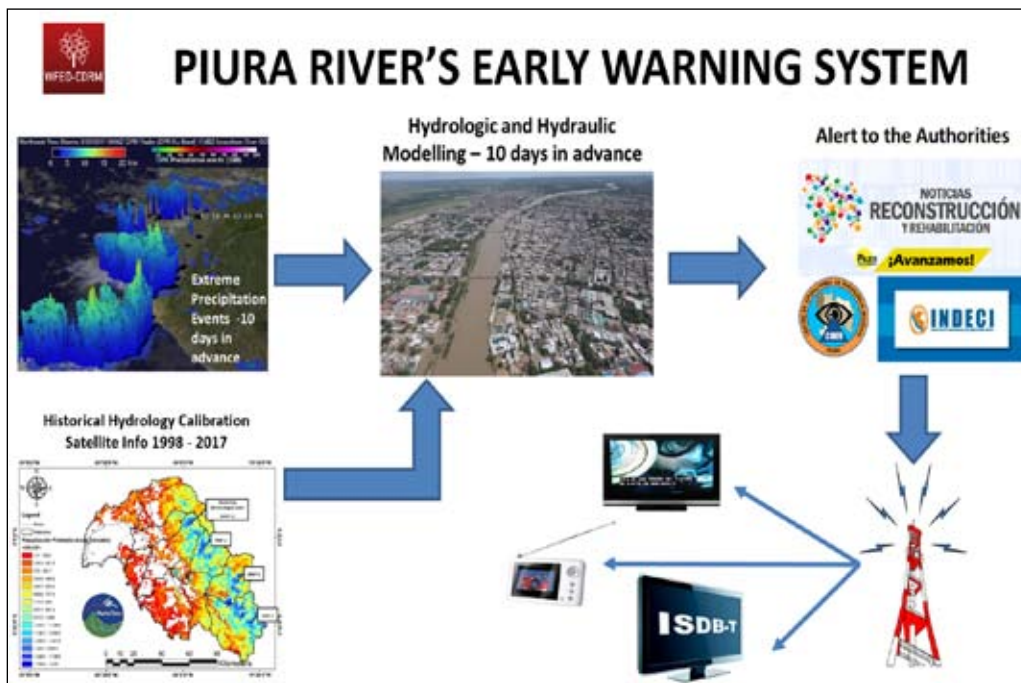
The Committee is also strongly focused on outreach activities.

This philosophy behind it is based on the recognition that only a minor portion of the scientific knowledge and of the engineering potential for natural disaster risk mitigation is used to benefit the large number of people who need it. The main task is to fill the long-standing gap between the knowledge generators and the final users. The ultimate goal is to inform the social planners, authorities, and other decision makers to use the knowledge and available information and apply them to their processes.

The result will be the contribution of the Committee to global objectives stated as the UN Sustainable Development Goal #11 "Make cities and human settlements inclusive, safe, resilient and sustainable".



L to R: Keynote speakers WFEO Executive Council Member and CDRM Vice Chair Dr Vilas Mujumdar, Dr Jorge A. Hurtado, Leader of Subcommittee on Earthquake and Tsunami Disaster Risk Management Dr Javier Piqué del Pozo and WFEO-CDRM Secretary Dr Javier Arrieta at the 12th International Symposium on Disaster Risk Management, Lima, Peru, September 2018



Piura River Early Warning System, Key Project of the Committee



ENSO (El Niño Southern Oscillation) event, Lima, Peru, 2018



Committee Host hand over from Japan to Peru, Rome, December 2017

Committee on Energy (CE)



The Committee on Energy's objective is to be the Engineering reference for sustainable energy development programs around the world.

Sam Grossman,
Chair of CE (2011 - 2019),
American Association of Engineering Societies

SUSTAINABLE DEVELOPMENT GOALS



The focus of the Committee is to deliver engineering solutions and showcase best practices in engineering to achieve the goal for sustainable energy at an affordable cost for all.

The work of the Committee on Energy focuses on enabling WFEO and the global engineering profession to support the achievement of the UN Sustainable Development Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all. Our work includes:

1. Develop sustainable engineering practices and technologies;
2. Share sustainable engineering practices with Global Engineering Community;
3. Identify and promote clean technologies and engineering practices to mitigate climate change;
4. Facilitate international cooperation on clean energy and technology, including renewable and energy efficiency;
5. Develop guidelines for practicing engineers on responsible energy sustainable practices in various areas of engineering practice.

Our mission is to:

- deliver sustainable practices that can be used in countries with little resources;
- ensure that the connections between the work of Energy STC and the SDGs are clearly stated, maintained, enhanced and reported; and
- coordinate, monitor and report on our activities to WFEO members, to practicing engineers and related disciplines in the wider community, and to other NGOs, to governments, and to policy makers.

The Committee on Energy has focused on a Plant in the Box concept. The Committee asked, "what every society has readily available?" and the resounding answer is trash/waste.

The trash varies from household trash to animal waste from agriculture. The Plant in the Box concept will take the majority of waste generated by a village and convert it into a sustainable resource. This concept can be rolled out to any rural village.

The biogas plant is sustainable as it treats farm waste or other biodegradable waste and transforms biomass waste into biogas (mainly methane and carbon dioxide), digestate and water. This technology is feasible for small holders of livestock in rural villages. This technology can be sized and located anywhere in the world. This plant will produce a high-quality biogas safe for use in homes with minimum maintenance costs.

The Committee on Energy participated in the Global Preparatory Meeting in support of the review of SDG 7 (Affordable and Clean Energy), jointly organized by United Nations Department of Economic and Social Affairs (UN DESA) and United Nations Economic and Social Commission for Asia and Pacific (UN ESCAP) on 21-23 February 2018 at the United Nations Conference Centre in Bangkok, Thailand.

As a co-chair in the Scientific and Technological Community Major Group, WFEO was invited to participate and speak on this occasion. This Meeting facilitated exchange of lessons, insights and experiences among member states, UN entities and other international organizations and all stakeholders, and considered challenges and opportunities for accelerating progress in the implementation of the 2030 Agenda.



Vice Chair of the WFEO Committee on Energy Pradeep Chaturvedi (left) in the Global SDG 7 Conference, Bangkok, Thailand, February 2018



Committee on Energy meeting during the GEC 2018, London, October 2018



Vice Chair of the WFE0 Committee on Energy Daniel Favrat speaks at the WFE0 Committee on Energy meeting, London, October 2018



Banner for the Global SDG 7 Conference

Committee on Engineering Capacity Building (CECB)



Our future depends on wise decisions and actions made in the present. We are committed to build a quality engineering profession that can respond to the current and future industry requirements with respect and a deep understanding of the societal, and environmental considerations for a sustainable world.

**Yashin Brijmohan,
Chair of CECB (2011 - 2019),
Engineering Council of South Africa**

SUSTAINABLE DEVELOPMENT GOALS

4 QUALITY EDUCATION



The goal of the committee is to build capacity to create, develop and maintain a sustainable engineering work force in all countries that respond adequately to the current and new world of work, given the changes introduced by the Fourth Industrial Revolution.

This requires a deep reflection on the themes of Engineering Education and Industry Standards, Globalisation, Mobility for engineers, Infrastructure development, Professional and Specialist development, as well as the way in which we develop Engineering Capacity for all countries to implement and maintain current and new technologies.

The Committee on Engineering Capacity Building (CECB) under the Chairmanship of Eng. Yashin Brijmohan has continued to support the UN Sustainable Development Goals (SDGs) in the area of Engineering Capacity Building.

Projects by the Capacity Building Committee

The Engineering Capacity Building committee has led and participated in several initiatives and projects.

UNESCO Africa Engineering Week

The Committee has been active in leading this initiative throughout Africa in collaboration with the Federation of African Engineering Organizations (FAEO). The activities during the Africa Engineering Week (AEW) increases the visibility of engineering, which is particularly important in the continent where there is a great need for engineers to achieve the SDGs. To date, six (6) African Engineering Weeks have been successfully held. The UNESCO AEW for 2018, in Kenya, hosted more than 800 delegates with representation from more than 16 countries with UNESCO participating in the outreach programmes.

The international event in Kenya, Mombasa covered the following: First African Women Engineers Summit, Mentoring Programme for school children (more than 200 learners), workshops on the theme "Harvesting Blue Economy for Accelerated Growth", the Africa Engineering Report, and the FAEO and the Southern African Federation of Engineering Organisation (SAFE0) Executive Meetings.

The Chair of CECB, Eng. Yashin Brijmohan presented on the International Engineering Alliance Framework and International Recognition Arrangements, chaired the Capacity Building Workshop on Engineering Education, Mobility and Continuous Professional Development, and facilitated the SAFE0 Strategic Planning Workshop.

Capacity Building Programme for Africa and the Africa Engineering Report

The Africa Engineering report is to be developed and supported by the countries in Africa. The Capacity Building Committee will lead this initiative, and also contribute to the second UNESCO Engineering Report. The Chair of the CECB is the lead author on Africa Chapter supported by the FAEO.

The CECB has developed the Capacity Building Programme for Africa concept and principles and encouraged countries to take initiatives for implementation. The projects involved support to Mauritius, Madagascar, and Seychelles, the Infrastructure Scorecard development in Zimbabwe and Malawi, and the training of professional mentors through CPD in Botswana.

Participation in the Gender Aviation Summit

The WFE0 CECB participated at the UNESCO Gender Aviation Summit in Capetown, South Africa 2018. The event covered the areas of gender equality and the 2030 agenda for sustainable development. The Chair of the WFE0 CECB presented on barriers and enablers in the education system and included a focus on the Sustainable Development Goals, and the mechanisms to transform the Education Landscape through incorporating systematic programmes to include intercultural competence, entrepreneurship, innovation and business development skills.

WFE0 Participation at the SABTIA Africa Tech Camp and What's Next Conference

This event was addressed by the South African Honourable Minister (Small Business Development) Lindiwe Zulu in the area on Innovation, Incubation, and Business Development. The Chairperson of the WFE0 CECB presented on WFE0, the outcomes of the UNESCO Africa Engineering Week, and the skills required for the knowledge era, with a focus on capacity building to prepare for the technology revolution.

The Vice Chair of CECB Eng. Martin Manuhwa chaired the 4th Industrial revolution roundtable discussion. The focus of the event was to build capacity in the areas of Incubation and acceleration which aligns to addressing several of the Sustainable Development goals. The programme was developed in partnership by the Southern African Business, the Technology Incubation Association (SABTIA) and Monash South Africa.

Participation at International Forums and Workshops

The International Forum on Engineering Capacity Building was hosted in Beijing, China, in November 2018 where Prof. Gong Ke presented on Engineers Capacity Building for Sustainability, and the CECB presented on Building Engineering Capacity and Capability for the Evolving Technological Era: Policy, International Standards and Regulation.

CECB participated and presented at the WFEO International Engineering Alliance Workshop on capacity building in Hong Kong in June 2019.

The committee has developed, supported, and implemented several projects and programmes. The success of the work is seen in the sustainability, momentum, and International partnerships that have evolved and also taken ownership of these projects, which have an impact to the area and support the Sustainable Development Goals.



CECB Chair Yashin Brijmohan speaking at the WFEO – IEA Capacity Building Workshop, during the International Engineering Alliance, Hong Kong, June 2019



Opening of 5th Africa Engineering Week, Mombasa, Kenya, September 2018



First Africa Women in Engineering Forum, held at 5th Africa Engineering Week, Mombasa, Kenya, September 2018

Committee on Engineering and the Environment (CEE)



The work of the Committee on Engineering and the Environment (CEE) is aimed at enabling the development, application, promotion and communication of environmentally sustainable and accountable engineering practices and technologies.

The committee is focused on SDG 13 – 'Climate action' looking at both the adaptation of infrastructures to the impacts of a changing climate and assessing and promoting engineering practices to mitigate climate change.

**Jean Venables,
Chair of CEE (2015 - 2019),
Institution of Engineers UK**

SUSTAINABLE DEVELOPMENT GOALS



Fethi Thabet, Theme leader on Engineering and Sustainable Agriculture and member of the Order of Tunisian Engineers, organised the conference Engineering and Food Security in Africa, which took place in Tunis, Tunisia, 24-25 June 2019 and focused on Agricultural policy and engineering needs to meet the challenges of food and water security.



CEE task groups on climate change adaptation and mitigation have attended the UNFCCC COP meetings 2017-2019, to promote the work WFE0-CEE is doing in relation to climate change mitigation and adaptation.

Main themes covered in the past two years

The work of the Committee on Engineering and the Environment (CEE) is aimed at enabling WFE0 and the global engineering profession to support the achievement of the UN Sustainable Development Goals through the development, application, promotion and communication of:

1. Environmentally sustainable and accountable engineering practices and technologies;
2. The adaptation of infrastructures to the impacts of a changing climate (SDG 13), decreasing resources and increased populations;
3. Assessing and promoting engineering practices to mitigate climate change (SDG 13);
4. Policy frameworks sets of guidelines and best practice for practicing engineers on responsible environmental stewardship and sustainable and ethical practices in various areas of engineering practice.

Since 2017, WFE0-CEE has become focused on SDG 13 'climate action'. Task groups on climate change adaptation regularly attend the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP) meetings to promote the engineering perspective on what is required in order to adapt to climatic uncertainty.

At COP 24 in Katowice, Poland, December 2018, WFE0-CEE, together with the Politechnika Krakowska Poland and the Leibniz Institute for Tropospheric Research (TROPOS) Germany, co-hosted a side event entitled "Sustainable solutions to combat climate change: contribution of engineers and reduction of air pollutants".

Former CEE Secretary David Lapp delivered a presentation "Framing Climate Science and Engineering Needs for Sound Science-based Decision Making for Climate Resilient Infrastructure". Past CEE Chair Darrel Danyluk participated in a panel "Future actions in our particular field that will contribute to climate change and air pollution reduction".

WFE0 participated in a workshop at the EU Pavilion at COP24 and a presentation from CEE members entitled "Energy and climate plans as a key engineering tool to create evidence based dialogue" was delivered.

Later in the conference, WFE0-CEE and GIZ co-hosted a side event entitled "Progress and prospects: The implementation challenge of adaptation within the Paris Agreement". Past Chair Darrel Danyluk delivered an introductory presentation entitled "The role of engineering in general and the WFE0 in particular in supporting the implementation of adaptation strategies". Attendance at this event was over 75 people.

At the UNFCCC SB50 held in Bonn In June 2019, Past CEE Chair Darrel Danyluk delivered a presentation "Infrastructure, Climate Change and Engineering Interaction" in a joint WFE0-GIZ side event entitled "Policy to Action: Use of Climate Services & Risk Insurance towards Climate-Resilient Infrastructure".

As well as the above, the current chair Jean Venables has also represented WFE0 and CEE at a number of international events including the Hong Kong Innovation Summit in January 2018.

In 2017-18, Engineers Canada and Polytechnique Montreal collaborated to develop a Massive Open On-Line Course "Sustainability in Practice". This free, four module course presents the principles explained in the WFE0 Model Code of Practice for Sustainable Development and Environmental Stewardship and the equivalent national guideline published by Engineers Canada.

The course was delivered in fall 2018 and spring 2019 with registrations of over 1,500 and 1,700 participants respectively. The WFE0 and CEE promoted the course to national and international members which contributed to the registration numbers.

2018 also saw many CEE members contributing to the Global Engineering Congress held in London in October 2018. These included sessions on:

- Strengthening Mobility: Promoting Small and Medium Enterprise for Sustainable Development in Asia Pacific;
- Low Carbon local energy systems;
- Integrating Climate Vulnerability Assessment with Asset Management to Build Resilient Public Infrastructure.

In November 2019, Chairmanship of the CEE will pass from Jean Venables to Davide Stronati, Global Sustainability leader at Mott MacDonald, for the next 4 years.

Key achievements

- Workshops held at COP23 in Germany and COP24 in Poland promoting the work of WFEO and highlighting the engineering challenges in delivering climate action.
- Engineering and Food Security conference held in Tunisia in June 2019.
- Launch of a Massive Open Online Course on Sustainability in Practice, a joint project between Engineers Canada and Polytechnique Montreal.
- 8 sessions held or chaired at the Global Engineering Congress in London in October 2018.



Opening of UNFCCC Climate Change conference in Bonn, Germany, 30 April 2018



WFEO Delegates at UNFCCC COP24 Climate Change Conference, Katowice, Poland, December 2018



WFEO Delegates at UNFCCC COP23 Climate Change Conference, Bonn, Germany, December 2017

Committee on Education in Engineering (CEIE)



The Committee on Education in Engineering (CEIE) held workshops during the committee meetings in London (2018) and in Rome (2017) highlighting the role of engineers worldwide in achieving the UN Sustainable Development Goals.

Abdul Menhem Alameddine,
Chair of CEIE (2011 - 2019),
Order of Engineers and Architects of Beirut, Lebanon

SUSTAINABLE DEVELOPMENT GOALS

4 QUALITY EDUCATION



The focus of our Committee is to address engineering education curricula and systems to ensure that engineers have the right skills to meet the objectives of sustainable development.

During the past two years:

- CEIE focused on publishing refereed articles on inclusion of sustainability concepts in general and the UN Sustainable Development Goals in particular in the "Ideas" publication.
- The committee also sponsored an Education conference in Lebanon in collaboration with the Federation of Arab Engineers and the Engineering Association of Mediterranean Countries (EAMC) under the title "The Importance of Scientific Research and Development in the quality of engineering education" held at the Order of Engineers in Beirut on 7-8 September 2018.
- The Committee was part of the accreditation process of the Federation of Lebanese Engineers.
- The Committee also expanded its reach to be involved in engineering education workshops in India.
- The Committee was also represented in the International Conference on Sustainable Infrastructure (ICSI) conference in New York and both Chair and Vice Chair of the committee served on different expert panels.
- It is mandatory to apply accreditation mechanism to all universities in-line with international standards;
- Develop studies that identify labor market requirements and enforce them;
- Develop the competency assessment mechanism required for new graduates and apply them transparently;
- Strengthen research activities and integrate them into engineering education curricula;
- Full cooperation and coordination between universities, researchers and students;
- Establish permanent training centers for practicing engineers to develop their skills;
- Develop a mechanism to benefit from industry experience in engineering education.

Dr. J.P. Mohsen participated as one of the eighteen global engineering education experts during the APICTEE 2018 (Andhra Pradesh International Conference on Transformations in Engineering Education) at Amaravati, on the campus of SRM University in India.

The Conference was held on July 14-17 and was co-organized by the India Universal Collaboration for Engineering Education (IUCEE), APSSDC (AP State Skill Development Corporation) and SRM at Amravati.

Dr. Mohsen made a presentation on Peer Evaluation of Teaching and conducted a panel discussion in the Second IUCEE Leadership Summit 2018. 106 leaders of 40 IUCEE Consortium Institutions gathered for the Second IUCEE Leadership Summit from July 19-21, 2018, at Goa, India, to share their transformational stories with 18 global experts and 13 industry leaders.

Key achievements and publications

1. CEIE joined as a panel speaker from WFE0-CEIE at the American Society of Civil Engineers (ASCE) ICSI in New York October 26, 2017 "Building Capacity for Civil Engineering Leadership in Sustainability: We Need You! – Higher Education".
2. CEIE was instrumental in introducing ASCE and American Society for Engineering Education (ASEE) in the Middle East and signing an MOU in the region. Both MOUs are with Lebanon effective through 2019 and will be renewed this year for 3 years.
3. The committee also sponsored an Education conference in Lebanon in collaboration with the Federation of Arab Engineers and EAMC under the title "The Importance of Scientific Research and Development in the quality of engineering education" held at the Order of Engineers in Beirut on 7-8 September 2018 and the following declarations were made:



Committee on Education in Engineering meeting during the GEC 2018, October 2018, London



WFEO Committee on Education in Engineering, London, October 2018



Ideas, the CEIE magazine



The Committee on Engineering for Innovative Technologies (CEIT) is hosted by China Association for Science and Technology since 2015, undertakes to lead the engineering profession worldwide towards promotion and application of engineering for innovative technologies for sustainable development and helping developing countries to close the technology gap which is essential to sustain the UN 2030 Sustainable Development Agenda.

CEIT now has 32 National Members from four continents.

Jing Peng,
Acting Chair of CEIT (Since 2018),
China Association for Science and Technology

SUSTAINABLE DEVELOPMENT GOALS

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



The Goal of the Committee is to advance the use of innovative technologies, specially Artificial Intelligence and Big Data, for sustainable development.

Innovative Technologies Achieving Responsible Application - the Position Paper on Big Data Ethics, is drafted by CEIT and aims to reach consensus between all stakeholders to achieve responsible application of Big Data and Artificial Intelligence. Based on the position paper, WFEO is seeking the cooperation with the International Science Council (ISC) and other international organisations to develop the paper which will advocate public awareness of Big Data ethics and facilitate better application for sustainable development.

Innovative Technologies Assisting Disaster Risk Reduction - the International Meridian Circle Project (IMCP), is initiated and led by CEIT. The International Meridian Circle Project (IMCP) has established a global network of earthquake monitoring based not only on the earth but also in space, by utilizing satellite on the orbit of International Meridian Circle (IMC), a circular orbit combining the 120°E meridian with 60°W meridian. Furthermore, this global monitoring system could integrate the sensing data onto the earth and from space, combining the given earthquake monitoring technology with innovative technologies, such as satellite remote sensing, Internet of Things (IoT) and Big Data, to acquire unprecedented ability to the monitoring of earthquake on a global scale. CEIT collaborated with CDRM hosting a workshop at GEC 2018 and experts reached a consensus on IMCP's facilitation in disaster risk reduction.

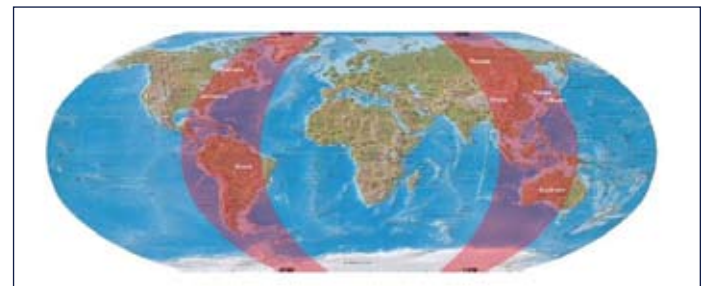
Innovative Technologies Facilitating Sustainable Development – Delphi Study, is used to identify the most important innovative technologies for SDGs. One round of Delphi Study have been done.

Enhancing International Collaboration – the Workshop on Human Intelligence and Artificial Intelligence (AI), was chaired by Prof. Gong Ke. CEIT cooperated with UNESCO officially launched the Chinese version of the Human Decisions Thoughts on AI in May 2018.

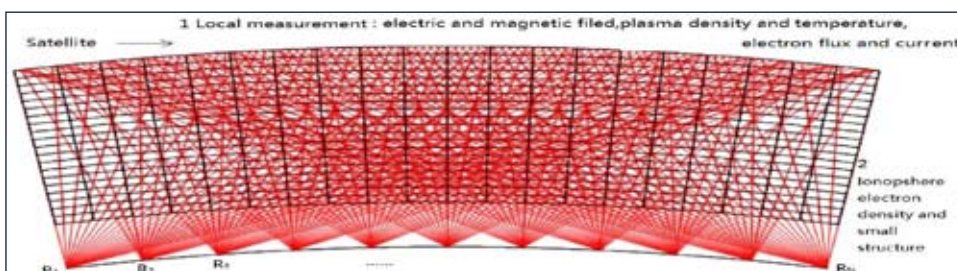
Expanding CEIT's Influence in Engineering – International Conferences co-organized by CEIT, including: World Intelligence Congress (WIC 2018 & 2019), World Robot Conference (WRC 2018 & 2019), New Championship Forum (2018), World Conference on Science Literacy (2018) and World Intelligent Manufacturing Summit (2018).

Delphi Study - To identify the most important innovative technologies for SDGs, several rounds of Delphi Studies are conducted among experts and officials in WFEO. The final round will be finished soon.

Following the election of Gong Ke as President Elect, Prof Gong Ke completed his term in December 2017. Prof. Jing Peng became acting Chair until November 2019 and will be endorsed as Chair for the next two years until 2021.



International Meridian Circle Project: Seismo Ionosphere Observations for Earthquake Prediction



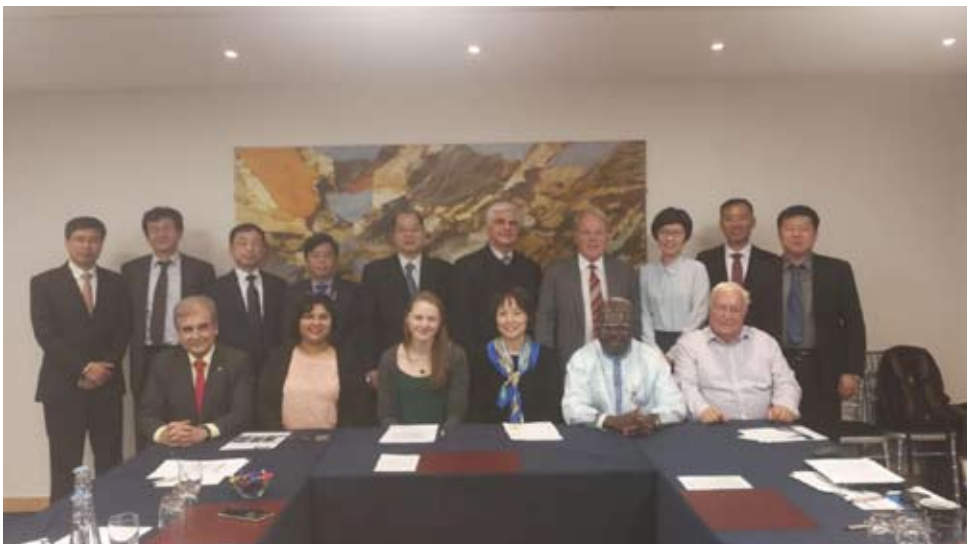
International Meridian Circle Project: Seismo Ionosphere Observations for Earthquake Prediction



CEIT & CDRM Joint Meeting at GEC 2018, London, October 2018



Workshop on Human Intelligence and Artificial Intelligence, Beijing, May 2018



Annual Meeting of CEIT at GEC 2018, London, October 2018

Committee on Information and Communication (CIC)



The committee has formulated an action plan based on the flagship event being an International Seminar held outside the host country and other seminars within the host country, issuing of monographs/publications, involving young and women engineers and students and dissemination of information. This has to a large extent been achieved.

**S.S. Rathore,
Chair of CIC (2015 - 2019),
Institution of Engineers India**

The main duty of the WFE0 Committee on Engineering for Information and Communication (CIC) is to help lead forward Information and Communication Technology (ICT) in order for it to be applied globally, and focus on developing countries where narrowing the gap has become essential.

The CIC is hosted by the Institution of Engineers India (IEI) for the term 2015-2019, and the focus areas are Smart cities, Industry 4.0 and SDGs 9 & 11. The Committee aims at facilitating Information & Communication Technology to be used in achieving the relevant SDGs.

Seminars

An International seminar was held at Ipoh, Malaysia, in July 2018 on "Industry 4.0" and attended by around 395 delegates from Malaysia and other Federation of Engineering Institutions of Asia and the Pacific (FEIAP) countries and more than 100 students, who were not charged any fee. The seminar was inaugurated by Y. Bhg. Dato' Norlee Ashilin Mohd Radzi, Tourism Perak.

Within the host country:

- AgRuTech2018 was held in April 2018 by Indian Technology Congress and WFE0-CIC.
- International Seminar on "Transforming the Enterprise for a Digital Age" was held at Bengaluru in September 2018.
- An International seminar was held by WFE0-CIC in association with Indian Technology Congress on "Futuristic Farmer-led Irrigation: Pressurized Pipe Network and Automation Technologies for Enhanced Water Use Efficiency" (an Indo-Israel initiative) at Bengaluru in March 2019.
- A seminar was held at Indus University, Ahmedabad, in March 2019 in relation to World Water Day (22 March) on the topic "Leaving no one behind".

A WFE0-CIC session chaired by WFE0 President Marlene Kanga was held during 32nd Indian Engineering Congress of IEI at Chennai, India in December 2017 with two lectures on "Smart Cities" & "Digital Experience-use of ICT in Construction of the World's tallest Statue of Unity".

An International Seminar on "Smart city-The Evolution of Urban Development" was held at Yangon, Myanmar in August 2019, where engineers from South East Asian countries and 100 local students attended. Six seminars were held in the host country, four publications were published and five newsletters issued.

SUSTAINABLE DEVELOPMENT GOALS

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



Recent disruptive technological innovations in production and leaps forward in industrial production, referred to as Industry 4.0 or the Fourth Industrial Revolution, are affecting our lives today and will shape societies in the future.

11 SUSTAINABLE CITIES AND COMMUNITIES



We have explored the potential of smart cities, in which the combination of digital connectivity, data, and citizen knowledge generates opportunities for public services to become better adapted to the needs of population and how technology might help minimise inequality by providing access to basic services.

Monographs / Publications / E-newsletters

Monographs / publications on ICT for Healthcare in India and Human values and Ethics for Engineers and Professionals were issued.

WFE0 & the Indian Technology Congress (ITC) jointly put out publications on "Compendium of Students' Satellites" and "Technology Innovation Production".

WFE0-CIC has published e-Newsletters of the Committee in September 2018, March 2019 and September 2019.

Mr. S.S. Rathore will complete his term as Chair of the Committee (2015-2019). The new Chair is Dr. T.M. Gunaraja for the term 2019-2023.



CIC Newsletter, September 2019



CIC Newsletter, March 2019



WFEO-CIC Chair delivering his address at the WFEO-CIC session held during 32nd Indian Engineering Congress of IEI at Chennai, India, December 2017

WFEO President delivered her speech on Smart cities for sustainable development at the International Seminar on "Industry 4.0", Ipoh, Malaysia, July 2018



Women engineers, young engineers and students at the International Seminar on "Industry 4.0", Ipoh, Malaysia, July 2018



As WFEO CAC, we shall take an ethical leadership position by upholding the commitment to speak and act boldly and loudly against corruption, and encourage our members to sign creeds, codes and oaths of engineering practice to ensure zero tolerance for corruption; which is one of the greatest obstacles to the development of safe and adequate infrastructure.

Through corruption, project funds are diverted to corrupt officials, funders, contractors, consultants, suppliers and agents, thereby reducing progress for sustainable development.

**Martin Manuhwa,
Chair of CAC (2011 - 2019),
Engineering Council of Zimbabwe**

SUSTAINABLE DEVELOPMENT GOALS

16 PEACE, JUSTICE AND STRONG INSTITUTIONS



Our objective is to support the development of ethical frameworks in organisations that will ensure justice and equity and strong institutions with good governance.

17 PARTNERSHIPS FOR THE GOALS



Partnerships are important to build capacity for ethical engineering and reduce corruption.

Good partnerships have been developed with the World Justice project, the UNDP, the Foundation for the Future, the Ministry of

Foreign Affairs of the Netherlands, World Bank, GIACC, ISO and the ACET.

UNESCO Ethics in Education ETICO programme has agreed to work with the Committee on Ethics Curricula in Engineering and other activities.

We have explored direct partnerships on training on the ISO37001 with FIDIC and the World Bank.

Our Committee was seized with the objective of Building WFEO National Member's Anti-corruption Capacity for Value Delivery and Business Integrity in infrastructure projects. Our vision is to promote zero tolerance to corruption. This will reduce corruption in engineering projects and practice through the enforcement of sound management systems and ethical professional practice.

Our Mission is to execute thematic, results-oriented (with agreed outcomes/impacts) programmes for 2017-2019 that raises ethics and corruption prevention awareness and increases the understanding of the global, regional, engineering and policy issues and solutions for the combating of corruption to induce transparency in infrastructure and other vital services.

Our key thematic areas were:

- Anti-corruption Projects (Pilot Study on the Infrastructure Anti-corruption Scorecard, Template for the compulsory teaching of Ethics in all Engineering Schools);
- Stakeholder engagements (partnerships through MoUs, publications, face-to-face meetings and webinars, workshops, conferences);
- Anti-corruption Capacity Building and Capability Development (training, workshops);
- Anti-corruption Standards Development (ISO37000 Standard on Governance of Organisations and draft Guidance Manual for ISO37001- the Anti-bribery management systems Standard, through participation in ISO committees that are developing these standards.

Many events took place but notable one was the side event at the GEC2018 in London, where a keynote address on Anti-corruption was delivered by Neill Stansbury of the Global Infrastructure Anti-Corruption Centre (GIACC).

WFEO CAC chaired a session and the Chair presented a paper on Infrastructure Anti-corruption at the World Construction Forum 2019, which was held in Ljubljana, Slovenia, from the 8th to the 11th April 2019, under the title "Buildings and Infrastructure Resilience".

The Institution of Engineers Kenya in collaboration with the Federation of African Engineering Organizations (FAEO) hosted the African Engineering Conference in Mombasa, Kenya, between 17 and 21 September 2018, with the support from UNESCO and guidance from WFEO.

Eng. Martin Manuhwa, Chair of the WFEO Committee for Anti-Corruption presented WFEO anti-corruption activities at the OECD Integrity Forum in March 2018. The OECD has invited WFEO to participate in other forums and high level discussions relating to improved integrity and anti-corruption in engineering projects.

OECD also expressed interest in the Anti-Corruption Index being developed by the Committee for Anti-Corruption and other areas where integrity is becoming important such as data integrity, cyber risk and the need to ensure compliance with standards and codes. The engagement between OECD and WFEO was considered important to improve integrity in these areas for sustainable development.

The collaboration with the World Justice Project is growing from strength to strength. Our members including the CAC Chair attended the following activities since 2017:

- World Justice Forum VI: April 29 to May 2, 2019 in The Hague, The Netherlands. Members of CAC attended this event which was important for its opportunities for advancing the rule of law and delivering on the promise of justice for all. Taking advantage of this political moment requires a coordinated effort to develop a shared understanding of why the rule of law and justice are important and what we can do about it. This event fostered multi-sectoral collaboration; and mobilized commitments to increase access to justice. The outcomes of World Justice Forum VI were fed directly into the UN High Level Political Forum on Sustainable Development Goals.
- The Hong Kong Independent Commission Against Corruption (ICAC) and the World Justice Project co-hosted the 7th ICAC Symposium: Fighting Corruption - A New Perspective from May 22-24, 2019 in Hong Kong. Chair of the WFE0 Committee on Anti-Corruption presented a keynote address on anti-corruption strategies and anti-bribery standards for construction and development projects in the developing world.

WFE0 CAC is in collaboration with ISO (the International Organization for Standardization) where members of CAC, Past Chair Kamel Ayadi and the current CAC Chair, Eng. Martin Manuhwa are representing WFE0 as members of the ISO37000 Technical Committee TC309.

The TC309 is working on ISO37000 Standard on Governance of Organisations. The team is also working on the draft of the Guidance Manual for ISO370001- the Anti-bribery management systems Standard.

WFE0 CAC made an impact by being able to be recognised and given support by international reputable organisations as listed below:

- World Justice Project – WFE0 CAC has been invited to contribute at all their key events and have partnered them to send key messages of how the rule of law can reduce corruption.
- The OECD, UNESCO and other organisations have recognised the contributions by the WFE0 CAC Committee.

CAC set up the following projects:

- ISO37001 train the trainer workshops facilitated by GIACC and WFE0.
- Procurement Codes for WFE0. A sub-committee has been set up to develop a Code of Best Practice of Procurement Systems. When the code is ready, WFE0 members are required to domesticate it and augment to the procurement systems in place in their countries.
- Draft Ethics Exemplar Curricula for Engineering Schools.



Committee on Anti-Corruption meeting, London, October 2018



Left: Neill Stansbury on the Anti-corruption panel before delivering the Keynote address at GEC 2018, London, October 2018



CAC Chair Eng. Martin Manuhwa Addressing OECD Delegates during the 2018 Integrity Forum, Paris, March 2018

Committee on Women in Engineering (WIE)



Women in Engineering (WIE) is a Standing Technical Committee of WFEW with the aim of reaching gender parity in engineering to constructively resolve global and national issues.

Using the strength of their diversity and differences for the benefit of humanity, the committee also strives to improve the representation of female engineers within WFEW while attracting and retaining young females interested in becoming engineering professionals worldwide.

**Valerie Agberagba,
Chair of WIE (2015 - 2019),
Nigerian Society of Engineers**

SUSTAINABLE DEVELOPMENT GOALS

5

GENDER
EQUALITY



Programmes and workshops that will enhance gender equality and help in reducing the gender gap. Capacity development workshops were also held for women in engineering.

6

CLEAN WATER
AND SANITATION



The Committee executed a project under goal 6 of the SDGs, target 6.2 is to achieve access to adequate and equitable sanitation and hygiene for all and end open defecation paying special attention to the needs of women and girls and those in vulnerable situations.

The Women in Engineering Committee has made tremendous progress in the actualization of its three themes:

- Theme 1 - Engineering Workforce Diversity,
- Theme 2 - Leadership and Empowerment,
- Theme 3 - Engineering Strategic Indicators.

The Committee had programmes that covered all the three themes.

Theme 1 - Engineering Workforce Diversity

The Committee had two panel discussions in Rome, Italy, during the World Engineering Forum 2017 (WEF2017). The sessions were chaired by the WIE Chair Engr. Valerie Agberagba and the Consiglio Nazionale degli Ingegneri (CNI), Italy representative in the committee, Ania Lopez.

Theme 2 - Leadership and Empowerment

The Committee had the First African Women Engineers Forum that brought together African Women Engineers to discuss their professional development. The Forum was held on 17th September 2018 at Mombasa, Kenya.

The theme of the Programme was "African Women in Engineering: Innovation and Community Sustainability". The meeting had 107 women engineers from eight countries and two internationals from Lebanon and Colombia in attendance.

The Women Engineers resolved to encourage research in engineering, enhance innovation and skills development by capacity building through workshops, mentoring of the young engineers. They also resolved to work with the UN Sustainable Development Goals that will impact on Gender Equality and Poverty Reduction. The Forum is expected to be held annually during the African Engineering Week.

Theme 3 - Engineering Strategic Indicators

The Committee executed a project on "Statistical Data for Women in Science and Engineering" to develop a baseline data for women in Science, Engineering and Technology (SET). The non-availability of empirical data on the participation of women in SET was of great concern and the project was therefore necessary to help analyze data that will establish requirements and needs for increasing female participation across Africa.

This was a pilot project across three African Countries: Nigeria, Rwanda and Malawi. The project was executed and funded through the Royal Academy of Engineering (RAENG), United Kingdom.

Other activities

The Committee also had programmes that celebrated the Women in Engineering and Technology.

Activities were held in various countries to celebrate International Women's Day (IWD). On 9th March 2018, the committee celebrated the day along with its 10 years anniversary in Paris during the WFEW meeting week and celebration of 50 years of WFEW. Some Past WFEW Presidents and Past Chairs of the Committee were honored for their unflinching support in the past 10 years.

The WFEW General Assembly approved a Declaration by the Committee for its activities in the following years.

The theme of the declaration was Women Engineers Making a Difference with Men as Allies: "Turning Words into Action". The Committee declared to collaborate with other WFEW STCs towards achieving SDGs 6, 7, 9, 11 and 13 and has therefore been working on programmes in that respect.

A project on SDG 6- Clean Water and Sanitation, target 6.2 which is to achieve access to adequate and equitable sanitation and hygiene for all and end open defecation paying special attention to the needs of women and girls and those in vulnerable situations was commenced in January 2018 in Nigeria.

The specific focus of the project was on Open Defecation (OD), using the Community Lead Total Sanitation (CLTS) approach which focuses on the community behavioral change rather than merely toilet construction. The project, though faced with many challenges, is almost being completed as we look forward to achieving an Open Defecation Free (ODF) before fall of 2019.

Inaugural Women in Engineering Award

The WFEO GREE Women in Engineering Award is sponsored by GREE Electric Appliances, the world's largest manufacturer of

white goods, based in China and founded by Madam Dong Mingzhu. The award provides recognition and visibility to outstanding women engineers. The annual Award consists of a medal, a certificate, a cash prize and the cost of travel to the venue of the WFEO presentation event.

Ms. Maria Teresa Estevan Bolea, Spain, was awarded the inaugural WFEO GREE Women in Engineering Award in London in October 2018. She is currently Director-General (CEO) of Sitesa Ingenieros S.A.

Ms. Valerie Agberagba will complete her term as Chair of the Committee (2015-2019). The new Chair is Ms. Yetunde Holloway.



Women Engineers at GEC2018, London, October 2018



The Women In Engineering Declaration, December 2017



Ms. Maria Teresa Estevan Bolea, Spain, was awarded the inaugural WFEO GREE Women in Engineering Award, London, 22 October 2018



First Africa WIE Forum, Mombasa, Kenya, September 2018



The power of youth is arguably the strongest force driving global markets, businesses and technologies! Our innovative tendencies and energetic dispositions make us see opportunities in what society call challenges. The pace of technological development in our generation has been unprecedented, and we continue to desire more opportunities for expression.

Zainab Garashi,
Chair of YEFL (2011 - 2019),
Kuwait Society of Engineers

SUSTAINABLE DEVELOPMENT GOALS

4 QUALITY EDUCATION



YEFL STC provides the platform for collaboration between young engineers, academia, industry and governments to develop working strategies that mutually benefits all parties;

- that ensures quality education that is

applicable for solving industry problems;

- that promotes sustained, inclusive and sustainable engagements across regional and multicultural lines, and between young engineers in developed and developing economies; and

- that promotes lifelong learning opportunities through exchange programs between academia and industry.

8 DECENT WORK AND ECONOMIC GROWTH



YEFL STC provides the platform that enables the cross-pollination of ideas thus enhancing economic growth, reducing unemployment and enabling decent work for all young engineers;

- a voice for expressing the young

engineers' innovation and facilitating entrepreneurship and a start-up culture;

- for collaboration and building of people-sized technologies addressing region-specific development gaps;

- for enhancing the opportunities available for connecting young engineers' inventions to venture capitalists from all over the world.

Focus Projects, Programs and Reports:

At the Committee on Young Engineers / Future Leaders (YEFL), we have taken up the responsibility to use our platform to bridge the gap between the solutions in young engineers' minds and the world's pressing needs, by improving the visibility of young engineers contributions and projects, and facilitating communication among all stakeholders involved in young engineer's development globally for the benefit of humanity.

Inaugural WFEO Young Engineers (Global) Projects Competition

This was a collaborative project initiated by WFEO President Dr. Marlene Kanga and developed and run with the WFEO Secretariat as part of the WFEO 50th Anniversary celebrations.

This Competition was a challenge aimed at bringing recognition and visibility to young engineers' ideas or projects while showcasing WFEO's commitment to the realization of the UN 2030 Agenda.

The 2018 challenge comprised 150 projects from 30 countries (11% of submissions from women engineers) assessed by the WFEO Projects Panel including the WFEO President Dr. Marlene Kanga, WFEO President-Elect Prof. Gong Ke and Ms. Zainab Garashi, YEFL Chair.

The best submissions and the winner, Sim Siang Tze Victor, were invited and sponsored by the Kuwait Society of Engineers to present their ideas at the Global Engineering Congress in London on 22 October 2018.

An overview of the best projects are below with full details in the WFEO Young Engineers Competition Brochure, which is available on the WFEO website.

1. Reverse Osmosis and Smart Sensor networks for purifying saline ground water and providing clean water and sanitation in Don Bosco School and Hlaing Thar Yar, Myanmar.
2. Targeted Poverty Alleviation using Geo-Spatial Information in Guizhou Province, China.
3. Solar powered Rural Irrigation in Chitwan, Makwanpou, Saptari and Dhading, Nepal.

4. Aquaponic systems – aquaculture and hydroponics – in rural areas of Cajamarca, Peru.
5. Solar electrification of 300 public hospitals in Venezuela.
6. Eco-sanitation projects and facilities in hospitals in Uganda.
7. Water quality Monitoring using IoT and Big Data in rural communities in Laguna province in the Philippines.
8. Groundwater extraction via solar powered submersible pumps in Yunnan, Guizhou and Gansu Provinces, China.
9. Potable water and sanitation for 140,000 residents in low-income communities in Ledzokuku Krowor, Adentan and Accra Metropolitan Assemblies, Ghana.
10. Integration and close coupling of multi-renewable energy systems for dispatchable energy supply to Shanxi, Suzhou and Beijing, China.

11. UNOPs Capacity Assessment Tool for Infrastructure (CAT-I) implementation in Serbia, Nepal and Brazil, with deployment plans in Grenada, Uganda, Kenya, St Lucia, Haiti, Pakistan, Myanmar, Panama and Laos.
12. Stable Isotope Probing for Fishery Mapping for Traceability and Biodiversity Assessment in all Philippines waters.
13. Vinculo Comunitario (Community Link Projects) for Social Restructuring – housing, infrastructure/utilities, education – in Celaya and Salvaterra, Guanajuato, Mexico.

International Strategic Forum - “Stakeholder Collaboration for Global Integration of Youth in Industry”

The YEFL International Strategic Forum “Stakeholder Collaboration for Global Integration of Youth in Industry” is an ongoing regional engagement bringing together all stakeholders, policy makers, corporate organizations, governments and NGOs involved in

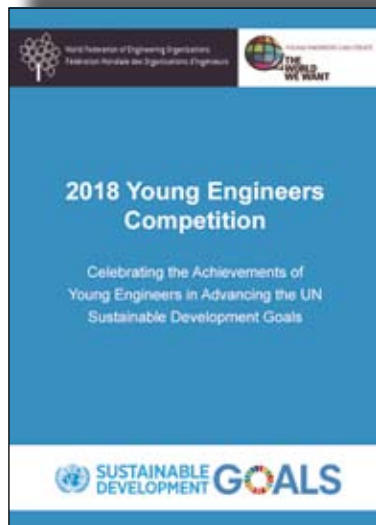
young engineers development to jointly co-create workable structures and systems that enable the unconstrained expression of young engineers’ capacity and competence in industry, government development plans, and in contributing to realizing the UN SDGs.

We have held these forums in Kuwait (Middle East) and Japan (Asia Pacific) in 2015, followed by Peru (South America) in 2016, Rome (Europe) in 2017, and South Africa (Africa) and Melbourne (Australia) planned for 2019.

These forums are helping to integrate the unique and insightful stories of young engineers across very diverse regional situations and national development frameworks and educational curricula into a position paper that will represent the global young engineers’ voice.

Second UNESCO Engineering Report

Regional trends in Engineering - The YEFL Chair contributed to the regional trends in Arab States and was a member of the Advisory Committee.



Inaugural Young Engineers Competition, published at GEC2018, London, October 2018



YEFL strategic forum held in Rome, December 2017



YEFL session, GEC 2018, London, October 2018

WFEO-UN Relations Committee (WURC)



The WFEO-UN Relations Committee (WURC) is the channel for the engineering societies of over 100 countries to participate on the world stage to advance the UN 17 Sustainable Development Goals.

**Reginald Vachon,
Chair, WURC (2011 - 2019),
American Association of Engineering Societies**

WURC serves as the focal point for UN activities with the Economic and Social Council (ECOSOC), United Nations Educational, Scientific and Cultural Organization (UNESCO), United Nations Framework Convention on Climate Change (UNFCCC), United Nations Environment Program (UNEP), United Nations Industrial Development Organization (UNIDO), United Nations Office for Disaster Risk Reduction (UNISDR), International Atomic Energy Agency (IAEA), International Organization for Standardization (ISO), Organisation for Economic Co-operation and Development (OECD) and the World Bank. It was formally recognised as a Policy Implementation Committee in October 2018.

WURC has conducted side events and participated at the Science Technology and Innovation (STI) Forums and High Level Political Forums (HLPF) meetings in the UN headquarters, New York, with the International Science Council (ISC) as a member of the Scientific and Technological Community Major Group (STCMG).

The Chair of WURC is a member of the HLPF Steering Group. The Steering Group assists the UN plan the HLPF and STI meetings. WURC has participated with WFEO Standing Technical Committees to focus contributions to the 17 SDGs.

Key achievements

- WURC conducted side events at UN STI Forums and UN HLPFs in 2018 and 2019,
- It has voiced interventions and presented statements on behalf of WFEO at the convocation of the ministers of the UN member countries,
- It has worked with other WFEO members to participate in a wide range of UN activities.

Participation in the UN CSW62, with the theme "Challenges & Opportunities in achieving gender equality and the empowerment of rural women and girls", 12 - 23 March 2018 in New York. Ms. Ruomei Li participated and made an address at the side event – "African Heritage Women in Education and Empowerment", organized by New Future Foundation.

Participation in the ECOSOC Partnership Forum 2018, with the theme "Partnerships for promoting opportunities, increased prosperity and sustainable development for all", 4 April 2018 in New York.

Participation in the 2018 STI Forum, with the theme "Transformation towards sustainable and resilient societies", 5-6 June 2018 in New York. Members of WURC participated in the STI Forum with the side event "Systems Analysis and Capacity Building for Transformative Change toward Achieving the SDGs and long-term sustainability".

Participation in the 2018 HLPF Forum, with the theme "Transformation towards sustainable and resilient societies", 9-18 July 2018 in New York. WFEO conducted the side event "STC for Sustainable and Resilient Societies", where Dr. Gong Ke and Dr. Vachon made presentations. Dr. Kelly moderated the side event.

Participation in the 62nd International Atomic Energy Agency (IAEA) General Conference. WFEO Past President Eng. Jorge Spitalnik and WURC Chair Reginald Vachon attended the technical program sessions "Nuclear Technology for Climate: Mitigation, Monitoring and Adaptation", 17-21 September 2018, in Vienna, Austria, at IAEA Headquarters.

Participation in the UN Commission on Status of Women (CSW63), with the theme "Social protection systems, access to public services and sustainable infrastructure for gender equality and the empowerment of women and girls", 11-22 March 2019 in New York. Ms. Ruomei Li, member of WFEO Executive Council, Committee on Women in Engineering and WURC, participated in many official events, side-events, parallel events, and made an address at the side event "A Strategic Plan for Gender Equality in Agribusiness in the Nations".

Participation in the 2019 STI Forum, which had the theme "Science, Technology and Innovation for ensuring inclusiveness and equality – Focus on SDGs 4 – Quality education, 8 – Economic growth, 10 – Reduce inequalities, 13 – Climate action, 16 – Peace and justice", 14-15 May 2019 in New York.

The STCMG and the UN Major Group for Children and Youth (UNMGCY) held a side event entitled "The role of Engineering and Science Education in empowering people and ensuring inclusiveness and equality" on 15 May 2019, in New York.

Participation in the 2019 UN High-level Political Forum (HLPF), that focused on "Empowering people and ensuring inclusiveness and equality", 9-15 July 2019 in New York, at the UN Headquarters. The STCMG organized the side event "Empowering People Through a Strong Science-Technology-Policy Interface: Reflections on the first cycle of the HLPF". Chair of the WFEO UN Relations Committee (WURC) and Executive Vice President Reginald Vachon and WURC member William Kelly interfaced with the meetings and contacts with the UN. WFEO President Dr. Marlene Kanga was one of the panellists and represented WFEO at three sessions, in New York.



WFEO President Dr. Marlene Kanga speaks at the Voluntary National Reports (VNR) Panel Discussion, UN High-level Political Forum, New York, July 2019



WFEO Executive Vice President Reginald Vachon addressing ECOSOC session, during the 2018 UN High-level Political Forum, New York, July 2018



WFEO President Dr Marlene Kanga at the UN High-level Political Forum 2019 Plenary session, New York, July 2019



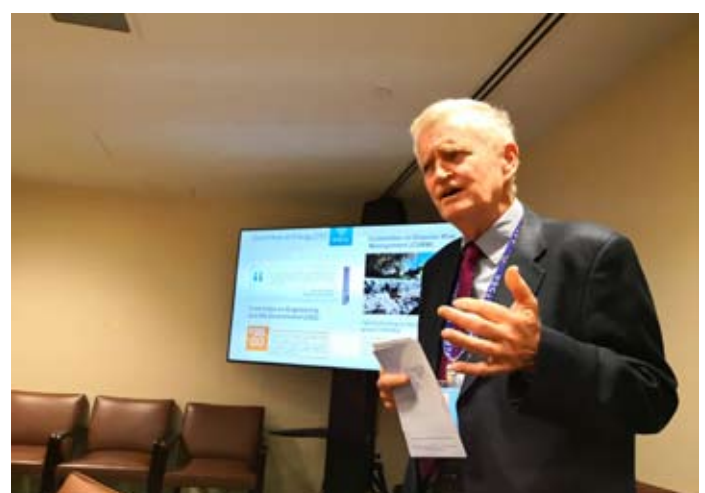
Ms. Ruomei Li, as the representative of WFEO, is making her presentation on the Commission on Status of Women (CSW63) side event "A Strategic Plan for Gender Equality in Agribusiness in the Nations", New York, March 2019



WFEO and International Science Council co-organised side event at the High Level Political Forum, on the science policy interface, New York, July 2019



Dr. Reginald Vachon intervention at Session 3: Science, Technology and Innovation for education and decent work for the future (SDG 4 and SDG 8), New York, May 2018



WURC Deputy Chair Dr. William Kelly at the Forum on Science Technology and Innovation side event, New York, May 2018

Working Group on Global Infrastructure Report (WGGIR)



The purpose of the Working Group on Global Infrastructure Report (WGGiR) is to provide guidance for the development of national infrastructure report cards with a view to producing a global infrastructure report.

Martin Van Veelen,
Chair of WGGiR (Since 2018),
Federation of African Engineering Organizations

SUSTAINABLE DEVELOPMENT GOALS

11 SUSTAINABLE CITIES AND COMMUNITIES



Effective infrastructure that provides access to basic necessities such as a source of clean water, reliable energy, affordable housing and transport is one of the cornerstones of eradicating poverty. Countries with effective and sustainable infrastructure will have the foundations for economic development, reducing poverty, improving education and health outcomes and improving the quality of life for its citizens.

The Working Group on Global Infrastructure Report was established in London during the 50th Anniversary Executive Council meeting, October 2018. It is hosted by the Federation of African Engineering Organizations (FAEO).

The proposed outcomes of the Working Group are to:

- Develop and finalize the Infrastructure Report Card Guide;
- Provide training on the development of national infrastructure report cards in the form of work sessions on a regional basis;
- Develop the format for the global report, and;
- Produce the Global Infrastructure Report biennially.

The Working Group will have regional representatives and report to both FAEO and WFEO. The report will be prepared in line with UN regions (9):

- Southern Asia;
- Sub-Saharan Africa;
- Eastern Asia;
- South-Eastern Asia;
- Latin America and the Caribbean;
- Western Asia;
- Oceania;
- Caucasus and Central Asia;
- Northern Africa.

Achievements to date

The Infrastructure Report Card Guide is being finalized and will be made available on the WFEO website and as many other websites as feasible. It is proposed that the Guide will be translated into other languages (Chinese, Arabic, French, Spanish).

Next phases

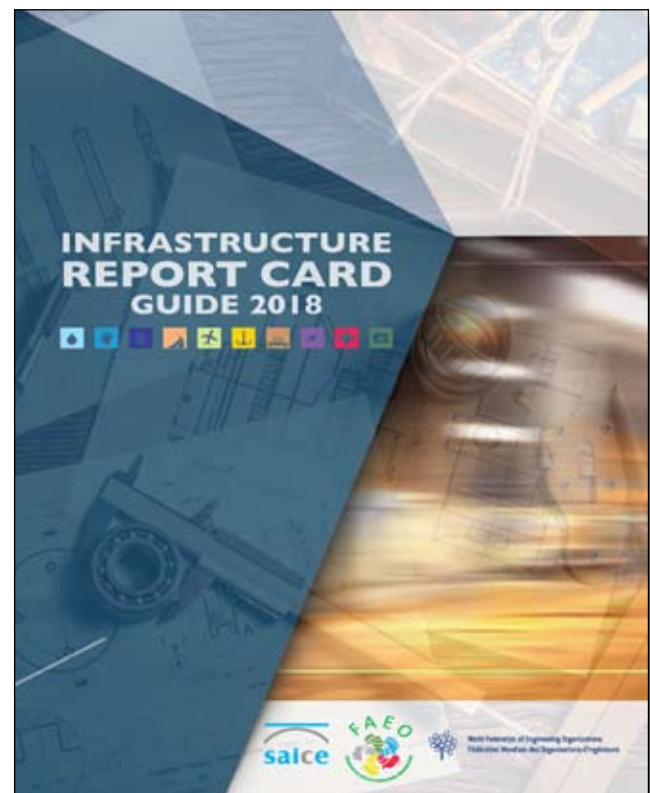
The next phase is the roll out of the Report Card by providing training in the form of workshop sessions on a regional basis. Support will be provided to teams that are developing the report card for the first time.

Sponsors are being sought for the project. A web based repository for report cards will be developed.

The format of the global report is to be developed with the ultimate goal of submitting the document to the United Nations.

The format will be consistent with reporting on other SDG indicators. The existing report cards will be used to test the format.

We plan to produce a biennial report as Infrastructure does not change rapidly. It is possible that there will be a focus on different continents/regions to retain momentum without becoming repetitive.



The Infrastructure Report Card Guide, 2018

Working Group on Water (WGoW)



WFEO, representing engineering, with the support of the Working Group on Water (WGoW), must acquire greater relevance in water global decisions, showing to the society the importance of engineering to improve the living conditions of all mankind.

Tomas A. Sancho,
Chair of WGoW (Since 2018),
Instituto de la Ingeniería de España

The Working Group on Water was approved by WFEO's 50th Anniversary Executive Council meeting held in October 2018 in London on the occasion of the Global Engineering Congress (GEC2018).

The Working Group is hosted jointly by Spain's Instituto de la Ingeniería de España and Portugal's Ordem dos Engenheiros. WCCE's Past President Tomás Sancho was appointed chair to this group and Teodoro Estrela, current WCCE's Standing Committee Chair on Water, is the Executive Director of the WGoW. Joaquim Pocas, Ode Portugal is the Vice president.

WFEO's Working Group on Water (WGoW) will encompass all WFEO's water engineering initiatives and its relations with UN's bodies and agencies, mainly with UN-Water and UNESCO, within the scope of the engineering's contribution to UN's Sustainable Development Goals.

The Working Group had its first formal meeting in Ljubljana in April 2019. In London, at GEC2018, a roundtable about water was conducted with the participation of Spain, Portugal, WCCE and Pakistan representatives. Another roundtable about Changing approaches to water sanitation and hygiene was conducted by Chair WGoW Tomás A. Sancho.

In WEC2019, Melbourne, November 2019, Chair Tomás Sancho will speak on the Working Group's first monograph: "Managing Floods and Droughts: Best practices and Engineering Contribution".

The Working Group is participating in UN-Water meetings in order to be engaged with the global movement supporting SDG 6 and attended the 2019 UN-Water meetings in Rome, February 2019 and Stockholm, August 2019. The main issue is now the SDG 6 Synthesis Report.

The 30th UN-Water Meeting reviewed the consultation process that was undertaken during the final stages of the preparation of the Synthesis Report 2018 including recommendations for the next Synthesis Report.

Participants also discussed a UN General Assembly (UNGA) resolution calling for two high-level meetings – one in 2021 and one in 2023 – on water and sanitation issues, and options for how UN-Water could contribute to the preparations for these meetings.

Key achievements, publications and declarations

A precedent is the Madrid Declaration in the commemoration of the 50th WFEO Anniversary, 1st March 2018: Water: The Future we want (Engineering contribution to SDG 6). The Declaration is available in the WFEO website.

SUSTAINABLE DEVELOPMENT GOALS



Water security, achieve SDG 6 and resilience to climate change require that engineering will provide knowledge and technology, leading water governance and its efficient use.



With the reports, we will support the knowledge transference between several regions of the world, and participate in UN-Water (through WCCE partnership) to increase the sound contribution on water related issues.

The work of the Working Group will comprise the 2019-2021 three-year period. During this period, three monographs will be scheduled regarding the following topics:

1. Managing droughts and floods: Best practices and engineering contribution, Summer 2019, with delivery anticipated at WEC2019, November 2019;
2. Achieving SDG 6 (Water goals): Contribution from engineering, Summer 2020;
3. Adaptation to climate change: water and engineering, contribution, Summer 2021.



Madrid Declaration "Water, the future we want", March 2018

WFE0 and Small Island Developing States (SIDS)

WFE0 is committed to capacity building efforts in engineering in the Small Island Developing States (SIDS) through its national members from Fiji, Mauritius and in the Caribbean, among others.

These members are among those affected by climate change and the impact of weather related natural disasters. Key issues that have been discussed at the events held in Fiji, Mauritius and in the West Indies have related to the need for resilient infrastructure for sustainable development and to withstand natural disasters which are increasing as a result of climate change.



Students with the President of the Republic of Fiji and WFE0 President Dr Marlene Kanga at International Engineering Symposium, Suva, Fiji, April 2018



Delegates at International Engineering Symposium on Sustainable Infrastructure Successful Economy, Suva, Fiji, April 2018



Mr. Pratarp Singh, Past President of Fiji Institution of Engineers and President of South Pacific Engineers Association (SPEA), opening the International Engineering Symposium on Sustainable Infrastructure Successful Economy, Suva, Fiji, April 2018



Poster for International Conference on Disaster Resilient Infrastructure in Trinidad and Tobago, hosted by Institution of Civil Engineers, West Indies, August 2018



Poster for Conference in Mauritius, November 2018

Work of our members and associates

Engineering Education Standards and Capacity Building for Engineering

This is an important partnership project involving these leading international organizations



The objective of this project is to review current standards for engineering education for graduate engineers, technologists and technicians and to consider enhancements to meet the needs of industry and society.

A second objective is to mentor and support countries to develop their engineering education systems and institutions to meet the standards for graduate outcomes and professional competencies that are recognized internationally.

This is a partnership project led by WFEO and the International Engineering Alliance (IEA), under the auspices of UNESCO, with the participation of WFEO partners and national members including:

- The International Federation of Engineering Education Societies (IFEES) which has the world's engineering education societies as its members;
- The UNESCO category 2 centre, the International Centre for Engineering Education, at Tsinghua University (ICEE);
- The international peak body for consulting engineering associations (FIDIC);
- The International Network for Women Engineers and Scientists (INWES) which represents the associations of women in engineering and science.

SUSTAINABLE DEVELOPMENT GOALS



The first meeting of the working groups was held in London in October 2018 and then in Hong Kong at the IEA Annual meetings in June 2019.

Further virtual meetings and a meeting in Melbourne in November 2019, are planned. A plan of work with an outcome of proposed standards for agreement and recognition by countries around the world has been developed.

Countries are invited to submit proposals for support for mentoring and development. A plan of work will be developed for each country to be supported.



President Elect Prof. Gong Ke speaking at the meeting of the International Engineering Alliance, Hong Kong, June 2019



Prof. Wu Qidi, Director, International centre for Engineering Education, Tsinghua University, speaking at the meeting of the International Engineering Alliance, Hong Kong, June 2019

Work of our members and associates

WomEng



It all started in South Africa in 2006. Since then we have scaled our programme to 14 other countries globally and we keep on growing !

**Ms. Hema Vallabh,
Co-founder of WomEng**



WomEng is an Associate member of WFE0 and was established in 2006 with the objective of encouraging girls to consider STEM (Science, Technology, Engineering, and Mathematics) as a career by creating STEM awareness for girls and developing, mentoring and supporting them through their engineering journey.

The symbol of the campaign is WomEng's trademark pink hard hat. The ambition of the campaign is to challenge the age-old perceptions and stereotypes that exist in the engineering industry and instill a sense of belief and ambition to pursue engineering careers in girl children around the world.

The #1MillionGirlsInSTEM campaign was launched at UN Headquarters in the Commission on the Status of Women (CSW61) in partnership with UNESCO in March 2017. The campaign will run over a period of 10 years aiming to create STEM awareness for the goal target of 1 million girls from ages of 6 years old upwards by 2027.

The model for extending the reach of STEM awareness to 1 million girls is based on an exponential train-the-trainer scaling model, working with individuals and/or organizations passionate about STEM, such as WFE0 member organizations, who can sign up for a #1MillionGirlsInSTEM toolkit to become an official WomEng Activator.

The reach is tracked on a live Google Map showcasing the number of countries, cities and girls reached. More than 50 activation workshops have been run around the world to date.

The #1MillionGirlsInSTEM campaign is a key component of WomEng's efforts to meet the Sustainable Development Goals, by investing in girls' education and creating gender equity for the entire engineering sector.

The programme includes five stages of attracting and retaining women in engineering:

- **LAUNCHPAD** - which introduces the girl child to the world of STEM and aims to break stereotypes about the industry.
- **GIRLENG** - increases awareness and makes STEM fun, engaging and relatable to secondary school girls.
- **CIRCLES** - in partnership with Lean-In, provides a supportive community for university students.
- **FELLOWSHIP** - is a flagship programme and runs as an annual technical innovation entrepreneurial challenge and employability programme. It is currently run in South Africa and Kenya with the goal to develop a Pan-African Fellowship, fostering skills across Africa. It has been run in Colombia, USA, Brazil, Mexico, UK, Indonesia and Malawi.
- **@NETWORK** - facilitates networking in person and on-line through a closed Facebook group and mentoring opportunities for young engineering graduates.

WomEng has been supported by the Royal Academy of Engineering Africa Catalyst Project which has enabled it to grow and expand across Africa. WFE0 is pleased to support this project at its events around the world especially in Africa.



GirlEng Technovation Challenge, Johannesburg, 2018



Fellowship South Africa, 2018

Source for images: WomEng

Work of our members and associates

Engineers Canada

“

30 by 30 provides the tools to create change. We provide opportunities for parents and children to explore and understand what engineering can be. We can ensure women in industry succeed, advance, and have a fulfilling career.

**Ms. Janet Southwood,
VP Partnerships of Engineers Canada**



SUSTAINABLE DEVELOPMENT GOALS



Engineers Canada is committed to increasing the representation of women in engineering and is actively working to ensure that the engineering profession is more diverse, inclusive, and reflective of the Canadian population that it serves. In the Engineers Canada Strategic Plan, 2019-2021, the Engineers Canada Board made the recruitment, retention, and professional development of women in the engineering profession one of our strategic priorities for the organization.

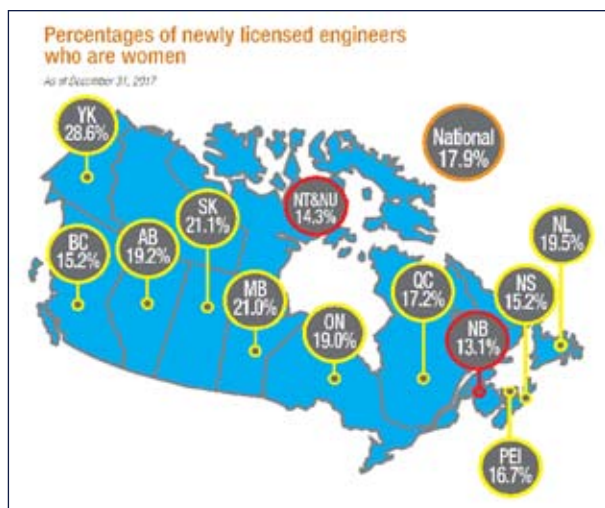
Engineers Canada spearheads the national 30 by 30 initiative, endorsed by all provincial regulators and many post-secondary institutions to scale efforts for women in engineering across the country. This initiative has a goal of raising the percentage of newly licensed engineers who are women to 30 percent by the year 2030; currently this figure is at 17.9 percent, and has held steady at this rate over the last three years.

Thirty per cent is universally held as the tipping point for sustainable change. Reaching 30 by 30 will help drive the shift in the overall membership of the engineering profession as more and more women continue to enter the profession. 30 by 30 has received national support across all provinces and territories.

The network includes major universities in Canada, the Association of Consulting Engineering Companies – Canada, and the Canadian Academy of Engineering. The group shares tools, resources, and best practices.

Engineers Canada regularly disseminates findings of research specifically aimed at improving working environments for the benefit of women engineers amongst the government and other stakeholders. We also continue to share and promote Managing Transitions, a guideline on managing maternity and parental leave.

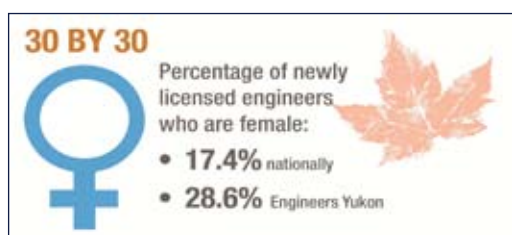
Engineers Canada partners with Girl Guides Canada, Go ENG Girl, DiscoverE and ExploreEngineering.ca to promote engineering as a career to girls and their families.



Infographic showing progress with 30 by 30 by province



Meeting of Champions for 30 by 30 programme, January 2018



Source for Images: Engineers Canada

WFEO Members

WFEO has some 130 members & associates from all regions of the world



National and Affiliated Members

Algeria	Union Nationale des Scientifiques et Technologues Algériens
Argentina	Union Argentina de Asociaciones de Ingenieros
Australia	Engineers Australia
Bahrain	Bahrain Society of Engineers
Bangladesh	Institution of Engineers, Bangladesh
Belize	Association of Professional Engineers of Belize
Bolivia	Sociedad de Ingenieros de Bolivia
Brazil	Federação Brasileira de Associações de Engenheiros
Bulgaria	Federation of the Scientific – Engineering Unions in Bulgaria
Cameroon	Association Professionnelle des Ingénieurs Conseils et Sociétés d'Ingénierie du Cameroun
Canada	Engineers Canada
Chile	Instituto de Ingenieros de Chile
China	China Association for Science and Technology
Chinese Taipei	Chinese Institute of Engineers
Colombia	Sociedad Colombiana de Ingenieros
Congo Democratic Rep.	Ordre National des Ingénieurs Civils
Costa Rica	Colegio Federado de Ingenieros y de Arquitectos de Costa Rica
Côte d'Ivoire	Fédération Nationale des Organisations d'Ing. Architectes Géomètres et Urbanistes de Côte d'Ivoire
Croatia	Croatian Chamber of Civil Engineers
Cuba	Unión nacional de arquitectos e ingenieros de la construcción de Cuba
Cyprus	Scientific Technical Chamber of Cyprus
Czech Republic	Czech Association of Scientific and Technical Societies
Ecuador	Sociedad de Ingenieros del Ecuador
Egypt	Egyptian Engineers Syndicate
Eswatini	Architects, Engineers, Surveyors & Allied Professionals of Eswatini
Ethiopia	Ethiopian Association of Civil Engineers
Fiji	Fiji Institution of Engineers
France	Ingénieurs et Scientifiques de France

Ghana
Greece
Honduras
Hong Kong, SAR of China
Hungary
India
Iraq
Italy
Japan
Jordan
Kenya
Korea
Kuwait
Lebanon
Libya
Madagascar
Malawi
Malaysia
Malta
Mauritius
Mexico
Moldavia
Mongolia
Montenegro
Morocco
Myanmar
Namibia
Nepal
New Zealand
Nigeria
North Macedonia
Oman
Pakistan
Palestine
Peru
Poland
Portugal
Puerto Rico
Qatar
Romania
Rwanda
Saudi Arabia
Senegal
Serbia
Sierra Leone
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Slovakia
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South Africa
Spain
Sri Lanka
Sudan
Switzerland
Syria
Tanzania
The Philippines
Tunisia
Turkey
Uganda
Ukraine
United Arab Emirates
United Kingdom
United States, America
Uruguay
Yemen
Zambia
Zimbabwe

Ghana Institution of Engineers
 Technical Chamber of Greece
 Colegio de Ingenieros Civiles de Honduras
 Hong Kong Institution of Engineers
 Federation of Technical & Scientific Societies
 Institution of Engineers, India
 Iraqi Engineers' Union
 Consiglio Nazionale degli Ingegneri
 Science Council of Japan
 Jordan Engineers' Association
 Institution of Engineers of Kenya
 Korean Federation of Eng. Organisations
 Kuwait Society of Engineers
 Ordre des Ing. et Architectes de Beyrouth
 Libyan Syndicate of Engineers
 Ordre des Ingénieurs de Madagascar
 Malawi Institution of Engineers
 Institution of Engineers, Malaysia
 Chamber of Engineers
 Institution of Engineers, Mauritius
 Union Mexicana de Asociaciones de Ing.
 Engineering Association of Moldavia
 Mongolian Federation of Eng. Organizations
 Engineers Chamber of Montenegro
 Union Nationale des Ingénieurs Marocains
 Myanmar Engineer Council
 Engineering Council of Namibia
 Nepal Engineers' Association
 Institution of Professional Engineers
 Nigerian Society of Engineers
 Chamber of Certified. Architects. and Eng.
 Oman Society of Engineers
 Institution of Engineers, Pakistan
 General Union of Palestinian Engineers
 Colegio de Ingenieros del Perú
 Polish Federation of Engineering Associations
 Ordem dos Engenheiros
 Colegio de Ing. y Agrimensores de P.R.
 Qatar Society of Engineers
 General Association of Eng. in Romania
 Institution of Engineers Rwanda
 Saudi Council of Engineers
 Union Nationale des Ingénieurs du Sénégal
 Serbian Chamber of Engineers
 Sierra Leone Institution of Engineers
 Institution of Engineers, Singapore
 Association of Slovak Scientific & Tech. Societies
 Slovenian Chamber of Engineers
 Engineering Council of South Africa
 Instituto de la Ingeniería de España
 Institution of Engineers, Sri Lanka
 Federation of Sudanese Engineers
 Swiss National Committee for FEANI-WFEO
 Order of Syrian Engineers and Architects
 Institution of Engineers, Tanzania
 Philippine Technological Council
 Ordre des Ingénieurs Tunisiens
 Union of Chambers of Turkish Eng. & Architects
 Uganda Institution of Professional Engineers
 Ukrainian Union Scientific and Eng. Associations
 Society of Engineers, UAE
 Institution of Civil Engineers
 American Association of Engineering Societies
 Asociacion de Ingenieros del Uruguay
 Syndicate of Yemeni Engineers
 Engineering Institution of Zambia
 Engineering Council of Zimbabwe

International Members

Commonwealth Engineers Council (CEC)
 Engineering Association of Mediterranean Countries (EAMC)
 European Federation of National Engineering Associations (FEANI)
 Federation of Arab Engineers (FAE)
 Federation of African Engineering Organizations (FAEO)
 Federation of Engineering Institutions of Asia and the Pacific (FEIAP)
 Federation of Engineering Institutions of South and Central Asia (FEISCA)
 International Federation for Medical and Biological Engineering (IFMBE)
 International Federation of Municipal Engineers (IFME)
 Union Panamericana de Asociaciones de Ingenieros (UPADI)
 Union of Scientific and Engineering Associations (USEA, Russia)
 World Council of Civil Engineers (WCCE)

Distinguished Associates and Sponsors

Consolidated Contractors Company (C.C.C)
 Khatib & Alami
 Gree Electric Appliances

Associates

Archirodon NV
 DMT Society for Teaching and Education (DMT-LB)
 European Council of Engineers Chambers (ECEC)
 Federal Council of Engineering, Architecture & Agronomics (CONFEA)
 Global Chinese Power & Energy Society (GCPES)
 Gulf Engineering Union (GEU)
 Japan Federation of Engineering Societies (JFES)
 Junta Central de los Consejos Prof. de Agrimensura, Arquitectura e Ing.
 Myanmar Engineering Society (MES)
 South African Institution Of Civil Engineering (SAICE)
 WomEng
 World Geospatial Industry Council (WGIC)

Welcome to new members, associates and sponsors as at 31 October 2019

Members

Architects, Engineers, Surveyors & Allied Professionals of Eswatini
 Ethiopian Association of Civil Engineers
 Engineering Council of Namibia
 International Federation of Medical and Biological Engineering
 International Federation of Municipal Engineers
 Myanmar Engineer Council
 Oman Society of Engineers

Associates

DMT Society for Teaching and Education (Germany)
 Global Chinese Power & Energy Society
 Myanmar Engineering Society
 South African Institution of Civil Engineering
 WomEng (South Africa)
 World Geospatial Industry Council

Sponsors

EPT China
 Gree Electric Appliances - WFEO GREE Women in Engineering Award
 Khatib & Alami - Dr Zuheir Alami WFEO Award for Engineering Innovation
 Sungrow
 Tsinghua Unigroup

Conferences and Events

Global Engineering Congress GEC2018

The WFEO Engineering 2030 Plan brought a strategic focus on advancing the UN Sustainable Development Goals through engineering through all WFEO activities and events.

The Global Engineering Congress (GEC2018) was the first time that the engineering profession came together to discuss the implementation of solutions for sustainable development. The success of the event was recognised by messages of congratulations from the Un Secretary General and the Assistant Director General of UNESCO.

The engagement has resulted in worldwide uptake of this issue by engineering companies and institutions and has galvanised engineers into thinking differently and incorporating the values of sustainable development into their everyday roles.



All WFEO Conferences and Events focussed on selected UN Sustainable Development Goals and had UNESCO patronage.

All WFEO Events now focus on one or more of the UN Sustainable Development Goals and have the patronage of UNESCO. Many events have led to significant legacy activities as a result of the transformative impact of the content presented at these events. Young engineers in particular have been engaged in the new narrative of the impact of engineering on society and the environment and providing a heightened purpose for engineering.

Between 22 and 26 October 2018, ICE hosted the Global Engineering Congress in London. Held in collaboration with WFEO and engineering organisations from around the world, it brought together thousands of delegates from more than 80 countries to address the United Nation's Sustainable Development Goals (SDGs).



GEC2018 Opening session, London, 22 october 2018



UNESCO Director, Division of Ecological and Earth Sciences Miguel Clusener-Godt, WFEO President Marlene Kanga and ICE President Lord Robert Mair at GEC2018 Opening

Conferences and Events

World Construction Forum WCF2019



The Ljubljana declaration

Engineering and Food Security Africa 2019



World Engineers Convention 2019



UNESCO-Africa Engineering Week

UNESCO-Africa Engineering Week 2019



The banner for UNESCO 6th Africa Engineering Week and 4th Africa Engineering Conference features logos for UNESCO, WFEO, FAEO, SAFEQ, and The Engineering Institution of Zambia. The main text is on a green background, and the theme is on a dark green background. Below the theme, five icons represent the Sustainable Development Goals (SDGs) 4, 5, 9, 11, and 13.

**UNESCO 6th AFRICA ENGINEERING WEEK
AND 4th AFRICA ENGINEERING CONFERENCE**
15th - 21st September, 2019

**THEME: ADDRESSING THE SDGs THROUGH
SUSTAINABLE ENGINEERING DEVELOPMENT**

DATES: 15th - 21st September 2019 **VENUE:** AVANI Victoria Falls Resort, Livingstone - Zambia

4 QUALITY EDUCATION
5 GENDER EQUALITY
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
11 SUSTAINABLE CITIES AND COMMUNITIES
13 CLIMATE ACTION

UNESCO-Africa Engineering Week 2018



The banner for UNESCO 5th Africa Engineering Week and 3rd Africa Engineering Conference features logos for UNESCO, WFEO, FAEO, and the Institution of Engineers of Kenya. The background shows a large cargo ship. The theme is prominently displayed in large, bold letters.

HOST:
The Institution of Engineers of Kenya (IEK)
Engineers Board of Kenya (EBK)

Theme
**HARNESSING
BLUE ECONOMY
FOR ACCELERATED
ECONOMIC GROWTH**

**5th AFRICA
ENGINEERING
WEEK**
**AND 3rd AFRICA
ENGINEERING
CONFERENCE**
17th - 21st September, 2018
at Pride-Inn Mombasa, Kenya

WFEO / FMOI **FAEO** **United Nations Educational, Scientific and Cultural Organization** **IEK** **Engineers Board of Kenya**

Future Events

Global Engineering Conference on Sustainable Development 2020

2020 WFEO EXECUTIVE COUNCIL MEETING TOGETHER WITH

GLOBAL ENGINEERING CONFERENCE
ON SUSTAINABLE DEVELOPMENT

26th- 30th October 2020 KIGALI CONVENTION CENTER

Theme: Capacity Building for Africa for 2030 Infrastructure
to mitigate Climate Change

Sub-themes

World Engineers Convention 2023

WEC 2023

7TH WORLD ENGINEERS
CONVENTION
PRAGUE, CZECH REPUBLIC
11 - 13 OCTOBER, 2023

THEME:
ENGINEERING FOR LIFE - BREAKTHROUGH
TECHNOLOGIES AND CAPACITY
DEVELOPMENT FOCUSED ON UN SDGS:

www.wec2023.com

WFEO Awards 2018 and 2019

WFEO awards recognise the accomplishments of individuals and organisations in contributing to engineering. In 2018, two new awards were established as part of the WFEO 50th Anniversary celebrations: The **Dr Zuheir Alami WFEO Award for Engineering Innovation** and the **WFEO GREE Women in Engineering Award**. These awards were presented at the WFEO 50th Anniversary Gala Dinner in London, 22 October 2018.

The 2019 Awards, including the **WFEO Medal of Engineering Excellence**, the **Medal for Excellence in Engineering Education** and the **Hassibh. J. Sabbagh Construction Excellence Awards for Smart Cities** and the **WFEO GREE Women in Engineering Award** were awarded at the WFEO Gala Dinner held during the General Assembly in Melbourne on 23 November 2019.

WFEO GREE Women in Engineering Award

The WFEO GREE Women in Engineering Award is sponsored by GREE Electric Appliances, the world's largest manufacturer of white goods, based in China and founded by Madam Dong Ming Zhu. The award provides recognition and visibility to outstanding women engineers, having shown professional excellence in their work, and as role models and leaders.

The Award consists of a certificate, the cost of travel to the venue of the WFEO annual presentation event and a cash prize and is presented annually at the WFEO Executive Council or General Assembly.



Ms. Maria Teresa Estevan Bolea, Spain, was awarded the inaugural WFEO GREE Women in Engineering Award on 22 October 2018.

Maria Teresa is the third woman in Spain to obtain an Industrial Engineer title in 1968 and was the first woman to join the Corps of Industrial Engineers of the Spanish Ministry of Industry and Energy. She has been a member of the Spanish Congress of Deputies (1987-1993), Member of the European Parliament (1994-1999) and President of the Spanish Nuclear Safety Council (2001-2006). She has been Dean of the Official College of Industrial Engineers from Madrid (2013-2016). She is currently Director-General (CEO) of Sitesa Ingenieros S.A.



Ms. Lydia Gonzalez Tansinsin, Philippines, is awarded the WFEO GREE Women in Engineering Award in November 2019.

Lydia has been a leading woman engineer in the Philippines and Asia-Pacific region for more than six decades. She was Undersecretary (Vice Minister) of the then Ministry of Science and Technology, leading policies and strategies that integrated science and technology in national development. She has been the leader and founder of national and regional engineering and technology organizations including AFEO, FEIAP, AAET, AETDEW, PTC, and the PTC-Women Engineers Network, the latter encouraging women engineering professionals in practice and services.

Dr Zuheir Alami WFEO Award for Engineering Innovation

This Award recognises the importance of engineering innovation for the development of the global community. This will be awarded every second year. It is proudly sponsored by Khatib & Alami (K&A), a global leader in innovation. The Award consists of a certificate and a cash prize, and is presented at the WFEO Executive Council meetings every two years.



Dr. William Ranson, USA, was awarded the inaugural Dr Zuheir Alami WFEO Award for Engineering Innovation on 22 October 2018.

Dr. Ranson is a consummate innovator and has led numerous technology development projects for NASA, the Department of Defense, the National Institutes of Health, and large corporations and holds several patents. He received the award for his development of an optical strain gauge, targeted at replacing the conventional electrical resistance strain gauges. The optical sensor can detect sub-surface crack initiation in holes such as rivet holes, enable measurement of cold working strain, operates over a wide temperature range and does not require recalibration. It has been commercialised via acquisition by General Electric.

WFEO Awards 2018 and 2019

The WFEO Medal for Engineering Excellence



Dr Vilas Mujumdar is awarded the 2019 WFEO medal for Engineering Excellence

Dr Mujumdar has been a consulting structural engineer designing facilities and buildings for seismic resilience. He has developed resilience as a systems level approach and has implemented the approach in California. He has contributed to the development of natural hazard design provisions in the International Building Code. He has developed and promoted the goal of resilience against natural hazards, combining engineering and socio-economic sciences. He has created educational opportunities for younger engineers to be educated in resilience and sustainability.

The WFEO Medal for Excellence in Engineering Education



Dr. Chuah Hean Teik is awarded the 2019 WFEO Medal for Excellence in Engineering Education.

Prof. Chuah is the President of University Tunku Abdul Rahman (UTAR) since 2008. He has developed many education innovations including Soft-Skill Certification for undergraduates for a broader range of capabilities, increasing their employability. The University has increased its rankings in Asia and internationally under his leadership. He has also led the development of accreditation systems and has mentored economies in Asia and Africa and has conducted training courses on Outcome-Based Education on behalf of the Federation of Engineering Institutions in Asia and the Pacific for academics, assessors and policy makers throughout Asia and the Pacific economies.

The Hassib J. Sabbagh Award For Engineering Construction Excellence

The purpose of this Award is to direct world attention to the role of engineering in sustainable development. It is sponsored by Consolidated Construction Contractors and was the initiative and endowment of late Hassib J. Sabbagh who devoted many years of concern and effort in the area of engineering and construction. The Award consists of a certificate and a cash prize and is presented at the WFEO General Assembly.



The development of Semakau Landfill addressed Singapore's land requirement for waste management.

Located 8km south of Singapore with an area of 350 hectares, this is the first man-made landfill created entirely from sea space between offshore islands. During construction, great care was taken to ensure biodiversity and nature were conserved. The design involves a single cell, a 200-metre long floating platform and a floating wastewater treatment plant. Semakau Landfill is an example of balancing sustainable waste management with the preservation of ecosystem and biodiversity.

Sponsors



Consolidated Contractors Company

Consolidated Contractors Company (CCC) is the largest construction company in the Middle East and ranks among the top 25 international contractors with a revenue of 7.4 billion USD in 2017. CCC has offices and projects in over 40 countries, and a workforce of 120,000 employees.



Khatib & Alami

Khatib & Alami is multidisciplinary urban and regional planning, architectural and engineering consulting company. It has been ranked 40 on ENR 2017 Top 225 International Design.



Sungrow

As a key high-tech enterprise in China, Sungrow Power Supply Co., Ltd. specializes in R&D, production, sales, and service of new energy power supply devices for solar energy, wind energy, and energy storage. Main products include PV inverters, wind converters, energy storage system, new energy automotive drive system, and floaters for floating PV power plants. We provide first-class solutions for PV power plants.



Tsinghua Unigroup

Tsinghua Unigroup is a leading designer and manufacturer of integrated circuits in China as well as the third-largest mobile chip designer globally. An essential provider of enterprise-class IT solutions, Tsinghua Unigroup delivers public, private and hybrid cloud solutions to various clients in China in line with its "Chip-to-Cloud" strategy. A strategic partner to global IT giants including Intel, HP and Western Digital etc, Tsinghua Unigroup has evolved into a globalized enterprise, focusing 5G, Internet of Things and artificial intelligence technologies in future.



EPT China

EPT China always adhered to the tenet of "Science and Technology are the primary productive forces", and tracks and disseminates the cutting-edge scientific and technological achievements of the domestic and international power industry, through science and technology, thermal, thermoelectric, electronic control, nuclear power, energy conservation, environmental protection.



GREE Electric Appliances

GREE Electric Appliances Inc. of Zhuhai is a Chinese major appliance manufacturer headquartered in Zhuhai, Guangdong province. It is the world's largest residential air-conditioner manufacturer. The Company distributes its products within China's domestic market and to overseas markets under the brand name of GREE.

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World Federation of Engineering Organizations
Fédération Mondiale des Organisations d'Ingénieurs
Federación Mundial de Organizaciones de Ingeniería
Всемирной федерации инженерных организаций
الإتحاد العالمي للمنظمات الهندسية
世界工程组织联合会



WFEO / FMOI

“Science is the Seed - **Engineering is the tree that bears the fruits** of scientific discoveries – essential for a modern sustainable world.” - Dr. Marlene Kanga AM, WFEO President

WFEO / FMOI

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