

Biennial Report 2015 - 2017



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

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On 4 March 1968, representatives of 50 scientific and technical associations from all over the world met under the auspices of the United Nations Educational, Scientific and Cultural Organization (UNESCO) in Paris to establish the World Federation of Engineering Organizations whose charter as an international, non-governmental organization is to unite multidisciplinary engineering associations throughout the world.

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WFEO at a glance



WFEO is a leading international NGO and a world class source of information and advice to national and international organizations.

It is active across all engineering disciplines and is steadily deploying a strategy to achieve its goal of providing engineering related solutions to the challenges of the 21st century.



WFEO was founded in 1968 under the auspices of UNESCO

Headquarters at UNESCO in Paris

Acts through ten Standing Technical Committees addressing such issues as engineering and the environment, disaster risk management, engineering capacity building, energy, education, engineering for innovative technologies...



Brings together national engineering organizations from over 90 nations

Represents some 23 million engineers from around the world

Aims at enhancing the practice of engineering

Makes information on engineering available to the countries of the world



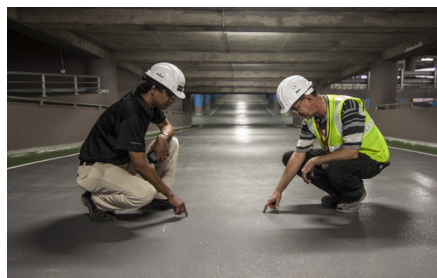
UN Photo/John Isaac



Fosters socio-economic security and sustainable development through the proper application of technology

Cooperates with UN bodies and other international organizations: UNFCCC, UNEP, UNISDR, UNCSD, UNESCO, OECD, World Energy Council, WMO...

Encourages public private partnerships by including the engineering dimension



Report of the President



Jorge Spitalnik
WFE0 President

“

During my term, from December 2015 to December 2017, I was able to enhance the WFE0 international status, leading our organization to be recognized by governments, intergovernmental organizations, international NGOs and the public in general, as a respected and reliable source of advice and guidance on issues that connect engineering and technology to human wellbeing and natural environment management.

In this respect, WFE0 has contributed in providing the engineering dimension to discussions on policies and investments in our Member Organizations' countries.

Implementation of the WFE0 Strategic Plan for developing, identifying and applying engineering and technology for sustainable development and poverty alleviation was pursued in the frame of UN organizations and agencies, such as HLPF, UNFCCC and UNESCO.

This included actions on education and training, capacity building, codes of practice, risk management, environmental protection, climate change mitigation and adaptation, sustainable energy and water supply, and codes for ethical professional practice.

A great effort was given to promoting highest standards for accreditation of engineering educational systems and for establishing mobility conditions for our Member Organizations' engineers. On-going support of the work and improvement of the quality of Standing Technical Committees (STCs) deliverables was strengthened in order to disseminate internally and externally STCs activities and the latest innovations in Engineering and Technology. Internally, an orderly and smooth transition of leadership was successfully achieved in the process of filling up the post of the new WFE0 Executive Director.

In another area, due to the expansion of scope of WFE0 activities requiring more efforts from the WFE0 Secretariat implying budgetary increases, we were able to produce a new fees structure based on the UNESCO assessments for Member States annual contributions. These contributions, based on each country economic and social indexes, have been accepted by the Member States as justified and impartial.

Recognizing its transparency and fairness, the WFE0 Executive Council endorsed the rationale for the new fees structure, to be submitted to the 2017 WFE0 General Assembly in Rome for adoption starting in 2018.

I was able to introduce and uphold the above-mentioned action lines in different events I attended representing the Federation. A description of such interventions follows.

- COP21, Paris, France (December 2015). WFE0 organized a side event called "WFE0 COP-21 Engineers Climate Change Summit" where I emphasized the fact that by exchanging and applying scientific knowledge, engineering creativity and practice, and up-to-date technology, engineers are able to substantially introduce sustainable solutions into most areas of activity that contribute to improving society's quality life. Engineering must intensely apply its proficiency to reduce carbon dioxide emissions in numerous fields including development of diversified energy sources, power generation technology, energy usage technology, and energy conservation technology.

- WFE0, Paris, France (March 2016). I led the meeting proceedings of the Executive Board.

- UNESCO, Paris, France (March 2016). I signed the renewal of the WFE0-UNESCO Framework Agreement of Cooperation between both organizations in areas related to Engineering and Technology development. Main projects foreseen in this cooperation agreement are the implementation of a UNESCO Africa Engineering Week and the production of a second UNESCO Report on Engineering.

Report of the President



Jorge Spitalnik making a keynote speech at the 20th Pacific Basin Nuclear Conference, Beijing, China, April 2016

- IESF, Paris, France (March 2016). I met with officers of IESF to set up their re-incorporation in WFEO as National Member from France. This re-incorporation was successfully concluded.

- PBNC, CAST, Hehai University, Tsinghua University, Beijing and Nanjing, China (May 2016). As invited speaker of the 20th PBNC Plenary Session, I delivered a paper on "Nuclear Energy in the Context of the COP-21 Climate Change Agreement". At the CAST Engineering Education Accreditation International Symposium, I presented a paper on "WFEO and Engineering Education Accreditation". At Tsinghua University of Beijing, I delivered a lecture on "Engineers' Contribution for Implementing the Sustainable Development Goals" and at Hehai University in Nanjing, the lecture was on "The Role of WFEO to Promote Engineers' Mobility".

- WFEO-UNESCO-UPADI-OAS, Brasília, Brazil (July 2016). The International Conference on "New Engineering Approaches for Supplying Sustainable Water and Energy", organized by our National Member FEBRAE and our Associate Organization CONFEA, was sponsored by WFEO, UNESCO, UPADI and OAS (Organization of American States). I opened the event and signed on behalf of WFEO the ensuing Declaration of Brasília.

The Declaration states that engineers are qualified to substantiate the implementation of solutions, particularly in the areas of sustainable water supply, through the design and implementation of systems for the efficient and diversified use of water resources, including use of groundwater, wastewater, effluents, desalination and rainwater collection.

- SOEA, Foz do Iguaçu, Brazil (August 2016). In this meeting, sponsored by CONFEA, I delivered an invited paper on "Globalization Processes for Engineering Professional Practice".

- CAETS, RAE, ICE, London (September 2016). On behalf of WFEO, I attended the CAETS Conference "Engineering a Better World" and addressed the audience at the closing session. On this occasion I met with Royal Academy of Engineering officers to discuss WFEO cooperation in the Africa Catalyst Project, and with the UK National Member ICE to discuss the preparation of the WFEO 50th Anniversary celebration in London in 2018.

- IAEA, Vienna, Austria (September 2016). I represented WFEO at the International Atomic Energy Agency (IAEA) General Conference in Vienna. WFEO is a recognized NGO in this UN agency.

- VDI, Düsseldorf, Germany (September 2016). I met with VDI to discuss on the future German participation in WFEO.

- UPADI, Panama City, Panama (October 2016). I represented WFEO at the UPADI Assembly in Panama. This Assembly recommended UPADI member organizations to adopt international systems of engineering educational accreditation that have equivalent evaluation standards.

- CONFEA-OEP, Lisbon, Portugal (November 2016). I attended the CONFEA-OEP workshop on the application of the agreement between both organizations for their members' professional practice in Portugal and Brazil. I also represented WFEO at the 80-years OEP anniversary celebration ceremonies, and took part in the setting up of the Federation of Portuguese Language Engineering Associations (FAELP) involving associations from Angola, Brazil, Cabo Verde, Macao, Mozambique and Portugal.

- SINEACE-ICACIT-CIP, Lima, Peru (December 2016). Invited to attend the International High Level Policy Forum on Accreditation and Professional Licensing of Engineers in Latin America and the Caribbean, I delivered a speech on "Initiatives for International Accreditation of Engineering Education Programs". I stressed that WFEO will support initiatives leading to the enhancement of programs to promote the global mobility of Engineering professionals, adding that programs for accreditation must ensure the application of engineering educational standards of similar level of quality than those being used by other organizations like IEA or EUR-ACE.



Jorge Spitalnik invited to the Fifth Meeting of Ministers and High Authorities of Science and Technology of the Organization of American States (OAS), Medellín, Colombia, November 2017

Report of the President

- WFEO, Lima, Peru (December 2016). I led the proceedings of the WFEO Executive Board and WFEO Executive Council Meetings.

- UPADI-SIB, Sucre, Bolivia (January 2017). I attended the ceremony of investiture of the new President of UPADI, Engr. Maria Teresa Dalenz, and the Engineering in the Americas Workshop organized by the Engineering Society of Bolivia (SIB).

- CONFEA, Campinas, Brazil (March 2017). In the Opening Session of the 8th World Water Forum Preparatory Meeting, I stated that climate change has been causing unprecedented situations for the replenishment of water resources in large urban conglomerates.

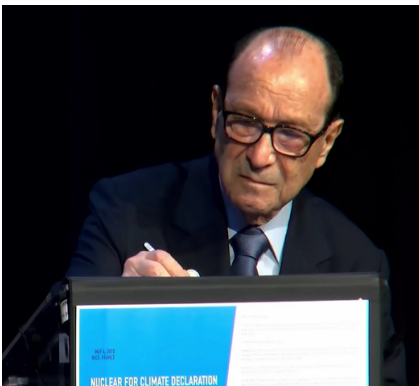
Implementation of sustainable water supply will require policies based on factual evidence, scientific knowledge, state-of-the-art of technology and engineering criteria on technical and economic feasibility, independently of ideological postulates.

- AIU, Montevideo, Uruguay (March 2017). A meeting with the officers of the Engineering Society of Uruguay (AIU) took place to encourage its members for a more active role in WFEO activities.

- WFEO, Paris, France (April 2017). I led the proceedings of the WFEO Executive Board. I met also with UNESCO officials for defining the participation of WFEO in the preparation of the second UNESCO Report on Engineering.

- CAE-ICEE, Beijing, China (May 2017). At the International Forum on Engineering Capacity Building and Engineering Education for the Future, organized by the Chinese Academy of Engineering (CAE), I was invited to deliver Opening Remarks related to the meeting subject. Bylaws and Rules of the China-UNESCO International Centre for Engineering Education (ICEE) were ratified and its Governing Board and Advisory Board constitutions were approved.

I was appointed Vice-Chair of the Advisory Board. The Chair of the WFEO Capacity Building STC, Engr. Yashin Brijmohan, was appointed Member of the Governing Board.



Jorge Spitalnik signing the «Nuclear for Climate» Declaration, Nice, France, May 2015



Jorge Spitalnik addressing the WECDRR 2016 Conference, Lima, Peru, December 2016

I met with CAST officers to discuss matters related to their cooperation with WFEO, and also with Jingshua University faculty members to outline WFEO activities in the areas of Sustainable Development and Capacity Building.

I visited the Institute of Nuclear Energy Safety Technology (INEST) in Hefei. INEST is a professional research institution focusing on nuclear energy safety and development of innovative nuclear energy systems. Cooperation and exchanges between INEST and the WFEO STC on Energy might lead to fruitful outcomes in both entities.

- ANS, San Francisco, USA (June 2017). On the frame of the American Nuclear Society Summer Meeting, an International Panel Discussion on "Optimal Energy Strategies Aimed at Sustainable Reduction of Greenhouse Gas Emissions" addressed the multiple issues involved in the process of selecting energy policies most likely to achieve a substantial reduction of greenhouse gases emissions. Invited by ANS, I chaired one of the Panel Sessions.

- UPADI, San José, Costa Rica (June 2017). I represented WFEO at the UPADI Assembly in Costa Rica.

- OAS, Medellín, Colombia (November 2017). I was invited to attend the Fifth Meeting of Ministers and High Authorities of Science and Technology under the theme Science, Technology and Innovation as Pillars of Transformation in the Americas.

- WFEO, Rome, Italy (November/December 2017). I led the proceedings of the WFEO Executive Board, WFEO Executive Council Meetings and WFEO Assembly.

My sincere thanks go to the President-Elect Marlene Kanga, the Past-President Marwan Abdelhamid, the members of the Executive Board - Reginald I. Vachon, Peter Greenwood, Ćrtomir Remec, the members of the Executive Council, the Executive Director and the Headquarters staff for their reliable advice, thorough support and forthright assistance.

Report of the President-Elect



Marlene Kanga
WFE0 President-Elect

“ Working with the United Nations, UNESCO and other international agencies will be a high priority to demonstrate the important role of engineering and technology in achieving the UN Sustainable Development Goals.

As the World Federation of Engineering Organizations commences its 50th year, I feel extraordinarily privileged to lead the world's engineers towards a better sustainable world.

I am committed to achieving our shared Vision for WFE0 – to be the internationally recognized, trusted leader of the engineering profession and to apply engineering to constructively resolve international issues. Working with the United Nations, UNESCO and other international agencies will be a high priority to demonstrate the important role of engineering and technology in achieving the UN Sustainable Development Goals.

During the past two years, I have consulted with our international peers in science and engineering and will forge active partnerships with the International Science Union (ICSU), the International Federation of Consulting Engineers (FIDIC), the International Council of Academies of Engineering and Technological Sciences (CAETS) and others to work together to achieve the Goals. It is also important that we forge relationships with universities and academia that train young people to become engineers and with industry and the organizations that employ our engineers.

I have also consulted widely with the national and international members of WFE0 to develop shared priorities for action during the coming years. Capacity building, improvement in the standards of engineering education and continuing professional development of engineers will be a key focus.

Another important area is to ensure that engineering is a diverse profession that provides opportunities for participation by all, irrespective of gender, ethnicity or age, so that we have the best intellects to develop the essential solutions so urgently needed for sustainable development.

In particular, we need to engage with young people so that they aspire to be a part of this dynamic, creative and innovative profession. I look forward to working with the members of WFE0 to deliver our plans for action.

As WFE0 reaches its 50th year, it is vital that WFE0 is the international voice for engineering – truly representing the national engineering professional associations from over 90 nations and some 23 million engineers. WFE0 has a unique position and is able to advocate for engineering issues at the highest international levels.

I will ensure that our voice is heard, to raise the profile of engineering and to make our society aware of the important contributions that engineering makes to every aspect of our lives.

I will endeavor to ensure that WFE0 is at the forefront of international discussions and policy debate at the highest levels, to ensure that the engineering viewpoint is considered for the best outcomes.



Marlene Kanga at the Women in Science, Technology and Innovation International Conference, Kuala Lumpur, Malaysia, May 2017

Report of the President-Elect



Marlene Kanga at the World Intelligence Congress (WIC 2017), Tianjin, China, June 2017

WFEO needs to be at the forefront in the development of international policies where engineering and technology have a key role in implementing solutions – climate change, environmental issues, energy, natural disaster risk management, as well as new and innovative technologies and information and communication technologies.

Our Standing Technical Committees are the engine room of the organization and are crucial to producing outcomes that support the UN Sustainable Development Goals. I will work to increase the visibility and recognition of these efforts in various international forums.

As we celebrate the successes of the past 50 years and the growth and success of WFEO, we must also look to the future. With rapid changes in technology, disruptive innovations and new challenges that emerge almost daily for engineers to solve, it is more important than ever for the organization to be sustainable for a long time so that we have the resources for our important work.

WFEO enables the world's engineers to come together - we have great strength and great opportunity to make a difference. I am committed to working with energy and integrity to support and facilitate our collective goals – on behalf of our members, for the engineering profession and for the benefit of humanity.

Dr. Marlene Kanga is the first chemical engineer to be President of WFEO. She was the 2013 National President of Engineers Australia. She is a leading non-executive director and board member in Australia and New Zealand. She has been involved with WFEO since 2007, as a founding member of the Committee for Women in Engineering.

She was also a founding member and Vice-Chair of the Committee for Disaster Risk Management and Chair of a Sub-Committee on Capacity Building for Natural Disaster Risk Management, which developed a web-based resource of information for engineers, supported by a corporate sponsor. She is the Chair for the World Engineers Convention (WEC2019) to be held in November 2019 in Melbourne Australia.

She has contributed to WFEO activities at the UN and is a member of the Advisory Group for the UNESCO Stem and Gender Advancement (SAGA) project.

Report of the Executive Director



Jacques de Méreuil
WFE0 Executive Director



During 2016 – 2017, a period of transition at the Secretariat level, with a large renewal of our team, the federation went on working on the world scene, developing its relations with UN, UNESCO and other related bodies.

WFE0 has published reports, articles, and disseminated documents of importance to engineers and the engineering profession. It is now a trusted source of information not only for its members but also for many international organizations.

Headquarters' Activities

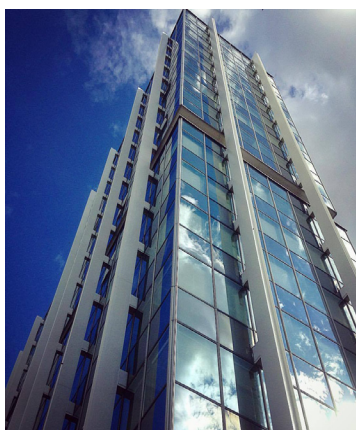
The Headquarters staff was largely renewed after my arrival mid-2016, with a new Executive Secretary, Théo Bélaud, and my predecessor Ms. Tahani Youssef progressively retiring. We continued to make great efforts to meet the requirements of the Federation's leadership and members in addition to the normal regular administrative tasks that they carry out.

We were involved in the work of such committees and task groups as the Nominations Committee, the Awards Committee, the Governing Documents Task Force...

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 highlight their actions to enhance the visibility of WFE0.

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.

We worked hard for the conclusion of two legal affairs, and ensured a smooth transition towards a new lawyer to defend our interests. We also ensured the protection of our name and logo, at the French level in a first phase.



Communication

Thanks to the continuous work of our webmaster Ivan Juiz, a completely revamped and restructured website will be online in 2018. It includes information of interest to engineers and to the public as acknowledged by the numerous messages expressing interest and satisfaction.

We have launched a new newsletter, Flash Info, published on a monthly basis, and sent to more and more readers (some 1668 people as of October 15). If you want to join this growing community, please sign up on www.wfeo.org

Our 50th anniversary, celebrated in 2018, will be an opportunity to develop further our presence on the internet and social networks

Financial Situation

We had the pleasure of welcoming new members and welcoming back some others.

Our Standing Technical Committees managed to receive funding from outside sources. We explored ways of receiving sponsorships, getting new associates and were successful in receiving financial support for specific WFE0 actions.

We were glad to receive funding from events' benefits organized by members, and expect this will be developed in the future. We also hope that our most affluent members will follow the example of those who have voluntarily increased their fees.

Report of the Executive Director

Ms. Tahani Youssef travelled to Kyoto (Japan) in November 2015 for the World Engineers' Convention (WECC-2015) and the WFEO general assembly meetings.

In 2016, I travelled twice to Peru, to follow up the preparations for the WFEO council meeting and the World Engineers Conference on Disaster Risk Reduction (WECDRR2106) and to participate in these events in December.

In April 2017, I went to Addis Ababa, Ethiopia, for a meeting organised by the UK Royal Academy of Engineering on the GCRF Africa Catalyst program, initiated by WFEO in the previous years. I attended two meetings on the subject with RAEng in London in 2016.

We had contacts to find new members and possible sponsors, in Paris but also in Europe (Belgium, UK, Germany...). Several meetings were also held with staff from international NGOs, and in particular ICSU – natural sciences – and ISSC – social sciences – with which we form the Scientific and Technological Community Major Group to the UN.

We organized the Executive Board meetings in Paris in March 2016 and April 2017.

Cooperation with UNESCO

Based in Paris, the Secretariat has an important role in maintaining and developing relations with UNESCO staff, all the more that we have an associate status with the organization.



During the last two years, UNESCO has significantly increased its activities with international NGOs in particular those located in its premises like WFEO. Those NGOs are involved in its priority fields – Science, Culture, Education; but also Africa and gender – and attend the UNESCO- NGOs general conference that takes place each December in Paris.

We coordinated the participation of WFEO delegates to several events, like the Women Forum in July 2017. We also co-organised with our French member IESF the JN2017 event held in UNESCO premises in October 2017.

We met with the ADG for Natural Sciences, Mrs. Schlegel in March 2016 with the President, and maintained continuous relations with the staff in charge of science and engineering at UNESCO, for subjects like the launching of the 2nd world engineering report, the Africa Engineering Week, the preparation of the 50th anniversary in UNESCO premises in March 2018.

We also met with the ADG for culture, with staff from the department for Africa as well as national permanent representatives to UNESCO.



As UNESCO did for previous ones, it sponsored the fifth World Engineers' Convention in Kyoto, Japan in November 2015 and will sponsor the sixth edition of the convention in Australia in 2019, as well as conferences organized in Rome in 2017 and in London in 2018.

WFEO is also active in the NGO/UNESCO hydrology project, launched in Yamoussoukro, Ivory Coast, at the Forum on Access to Water for All in Africa in 2014.

Some other Participations

- Several meetings organized by our French member IESF
- October 2016: meeting on the Global Sustainable Development Report at the French ministry of Foreign Affairs
- March 2017 : Forum in Paris on capacity building in Western Africa (Entretiens Eurafriains)
- June 2017: OECD Forum
- August 2017: Deans Forum 2017 at Mines ParisTech school in Paris

Appreciation

I am particularly grateful to the President as well as the members of the Executive Board and the Executive Council, and also my predecessor Ms. Tahani Youssef for their continuous support and assistance to the whole team.

WFEO Executive Council

Executive Board

Jorge Spitalnik
President

Marlene Kanga
President-Elect

Marwan Abdelhamid
Past President

Peter Greenwood
Executive Vice President

Crtomir Remec
Executive Vice President

Reginald Vachon
Treasurer

Pierre de Boigne
Deputy Treasurer

Jacques de Méreuil
Executive Director

Committee Chairs – Vice Presidents

Abdul M. Alameddine
Education in Engineering

Jean Venables
Engineering & the Environment

Ke Gong
Eng. for Innovative Technologies

S.S. Rathore
Information & Communication

Zainab Garashi
Young Eng. / Future Leaders

Samuel Grossman
Energy

Valerie Agberagba
Women in Engineering

Martin Manuhwa
Anti-corruption

Toshimitsu Komatsu
Disaster Risk Management

Yashin Brijmohan
Engineering Capacity Building

National Members

José Tadeu Da Silva
Brazil

Ruomei Li
China

Khaled Chehab
Lebanon

Vilas Mujumdar
USA

Ashok Basa
India

Nicola Monda
Italy

Tomas Sancho
Spain

Haro Bedelian
UK

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 Vieira
European Federation of National
Engineering Associations (FEANI)

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

Edemar Amorim
Pan American Federation of
Engineering Societies (UPADI)

WFEO Standing Technical Committees

 WFEO-CDRM	Committee on Disaster Risk Management (CDRM)
 WFEO-CAC	Committee on Anti-Corruption (CAC)
 WFEO-CIC	Committee on Information and Communication (CIC)
 WFEO-CE	Committee on Energy (CE)
 WFEO-CEIE	Committee on Education in Engineering (CEIE)
 WFEO-WIE	Committee on Women in Engineering (WIE)
 WFEO-CEIT	Committee on Engineering for Innovative Technologies (CEIT)
 WFEO-CECB	Committee on Engineering Capacity Building (CECB)
 WFEO-CEE	Committee on Engineering and the Environment (CEE)
 WFEO-YEFL	Committee on Young Engineers / Future Leaders (YE/FL)

Committee on Disaster Risk Management (CDRM)



CDRM has focused on introducing, recommending and developing the best practices, lessons, and appropriate methods for natural disaster prevention, reduction, and resilience as well as adaptation to disaster risks under global climate change and future potential earthquakes.

The committee has promoted sustainable and adaptable development based on DRM through scientific and engineering approaches. The mission is to share those practices, lessons and methods with WFEO member countries, engineering societies and leading engineers over the world.

**Toshimitsu Komatsu,
Chairman of CDRM (Japan)**



CDRM Chairman Toshimitsu Komatsu addressing the I3R2 Conference in Seoul, South Korea, August 2015

CDRM's host country is currently Japan, where severe natural disasters potentially occur. Because of this, the current host country is one of the best countries when expanding valuable lessons learned from past disasters in Japan to other disaster-related vulnerable countries.

CDRM's activities were performed locally, globally, and practically for international collaborations, membership expansion, and awareness campaigns to promote disaster prevention, reduction, and resilience based on Disaster Risk Management (DRM).

In addition, three subcommittees (water/landslide disaster, earthquake disaster, and capacity building) have independently performed their activities.



Earthquake disaster in Kumamoto, Japan, April 2016

CDRM had three major achievements through practical and effective activities from April 2015 to March 2017.

The first achievement was the successful promotion for the international collaborations with the International Institute for Infrastructure Resilience and Reconstruction (I3R2), an international consortium that focused on infrastructure, resilience and reconstruction against natural disasters.

For example, CDRM held a special session on DRM by working with the I3R2 for their international conference in Seoul, South Korea, August 2015.

In addition, CDRM continuously had information exchange since 2014 with a member who belongs to a UNESCO disaster reduction group. Then, he and CDRM have collaboratively conducted the building seismic-standards-related research.

Secondly, CDRM actively recruited new members for membership expansions. In particular, CDRM Chair and Secretary visited several countries for their businesses and then recruited appropriate new members.



CDRM meeting during the World Engineering Conference on Disaster Risk Reduction (WECDRR 2016) in Lima, Peru, December 2016

Finally, holding international symposia on DRM is one of the most important activities to promote awareness campaigns. CDRM held two joint international symposia on DRM in November 2015 in Kyoto, Japan, and September 2016 in Tainan, Taiwan, China.

The former symposium invited ten guest speakers and attracted approximately 100 participants. The latter was held out of Japan, where is the CDRM host country, to extend the CDRM activities more internationally.

These symposia were locally and internationally collaborated with different engineering-oriented organizations, such as civil engineering and architecture engineering associations to solve interdisciplinary and complex disaster issues by engineering approaches.



Three subcommittees of CDRM also performed their activities independently:

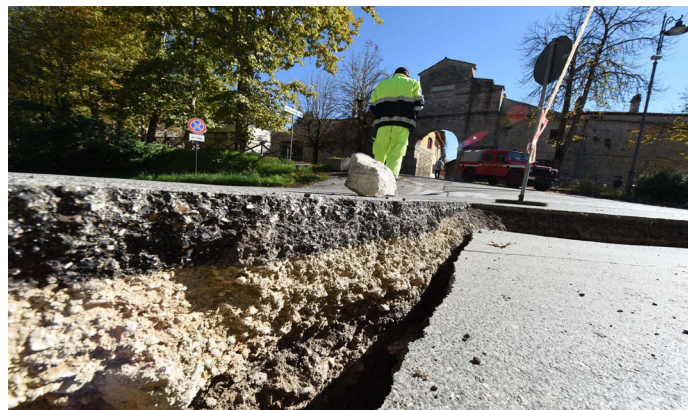
Water-related Disaster Risk Management (WDRM)

WDRM subcommittee worked with disaster-oriented international organizations, e.g., United Nations Office for Disaster Risk Reduction (UNISDR) and Integrated Research on Disaster Risk (IRDR) in order to implement to sustainable societies the Sendai Framework for Disaster Risk Reduction 2015-2030 (namely, Sendai Framework), which was adopted by UN member states at the World Conference on Disaster Risk Reduction in March 2015 Sendai, Japan.



Earthquake-related Disaster Risk Management (EQDRM)

EQDRM subcommittee mainly contributed to the creation of Sendai Framework by coordinating with other Japanese academic organizations. Together with the UNESCO disaster reduction group, this subcommittee also contributed to an investigation into establishing worldwide seismic standards for buildings.



Capacity Building for Natural Disaster Risk Management (CBNDRM)

The CBNDRM subcommittee annually attended the general assembly of the Federation of Engineering Institutions of Asia and the Pacific (FEIAP) in Taipei, Taiwan, China in 2015 and Perth, Australia in 2016 to promote information exchange with a local DRM committee under FEIAP.

CDRM selected the following targets to contribute to the SDGs:



1 NO POVERTY



Target 1.5 - By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.

11 SUSTAINABLE CITIES AND COMMUNITIES



Target 11.5 - By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in

vulnerable situations.

Target 11.B - By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels.

13 CLIMATE ACTION



Target 13.1 - Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries

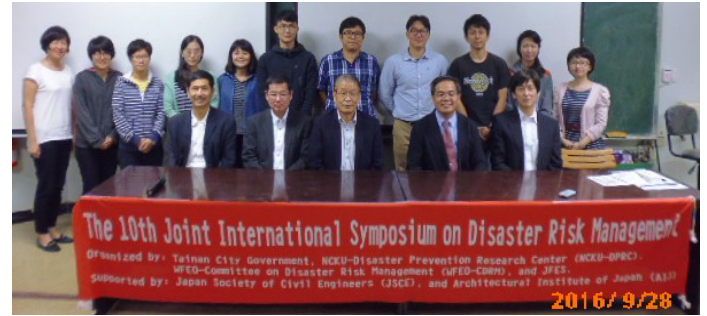
Target 13.2 Integrate climate change measures into national policies, strategies and planning.

Target 13.3 - Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.

Regarding above mentioned targets, CDRM held several events, such as international symposia on DRM (Taiwan China and Japan) and international collaborations with the I3R2 and UNESCO, for dissemination of Engineers role in these targets.

In addition, CDRM Chair Dr. Komatsu and Secretary Dr. Tsukahara have participated in UNISDR/IRDR activities (for implementing the above targets) of the Science Council of Japan (SCJ) as core members.

Special committees (WFEO committee and IRDR committee), which are set up in SCJ, have closely coordinated with disaster risk reduction activities in SCJ.



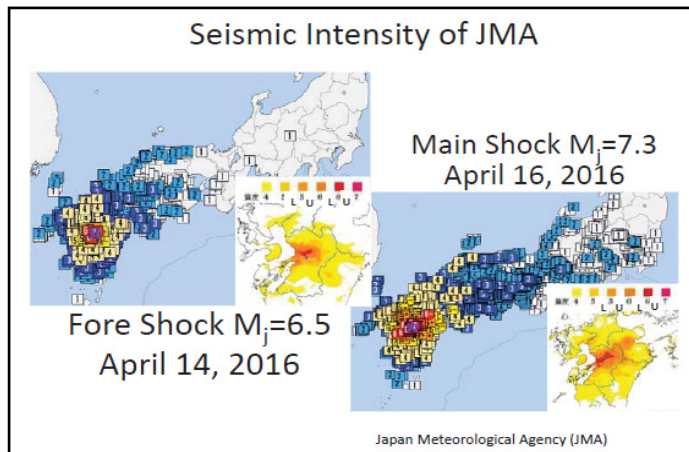
Group photo during the 10th Joint International Symposium on Disaster Risk Management, Tainan City, Taiwan, China, September 2016



CDRM Deputy Secretary Nobuaki Kimura during the Committee meeting at WECDRR 2016 in Lima, Peru, December 2016



CDRM meeting during the World Engineering Conference and Convention WECC 2015 in Kyoto, Japan, November 2015





LIMA DECLARATION



Increasing resilience of infrastructure vis-à-vis natural and man-made disasters

The World Federation of Engineering Organizations (WFEO), representing the engineering organizations of more than 90 countries and of 10 international engineering federations, met in Lima - Peru and agreed to issue this Declaration.

Considering that:

1. As a normal process of the earth evolution, strong natural events hit the Earth surface for billions of years.
2. The ongoing climate change increases the destructive power of atmospheric phenomena, both by changing the prevalent weather conditions and by weakening the protection of populations.
3. There are human activities, like unplanned growth of cities, invasion of dangerous zones, weak and exposed housing, hospitals, and schools structures as well as infrastructures, that increase vulnerability and create conditions favoring catastrophic events.
4. Since the start of the 20th century, more than eight million deaths and seven trillion US dollars economic damage are the result of natural disasters.
5. Although the occurrence of strong and potentially harmful natural phenomena can neither be stopped nor managed, the correct application of policies, strategies and actions can successfully reduce vulnerability and high risks.
6. It is an essential function of professional engineers to contribute to create safer, sustainable, and prosperous societies.

Declare:

1. Disaster risk reduction is a multi-disciplinary effort that goes beyond the engineering domain, requiring political intervention for assuring economic resources and establishing adequate priorities.
2. There is a strong commitment of engineering to actively participate in processes leading to avoid loss of life and property, and to reduce human suffering due to the damaging effects of natural and man made hazards.
3. To increase the resilience of infrastructure vis-a-vis natural and man-made disasters, local scientific and engineering capacities must be strengthened in areas like building techniques, structural design, geology, hydrology, meteorology, fluid mechanics, materials science, and economics.
4. Engineering ought to continue its progress towards implementation of mitigation and adaptation measures upon the effects of natural and man-made disasters, bearing in mind humanity's quality of life improvement.

Signed in Lima, on December the 6th, 2016.

Jorge Spitalnik
President of the World Federation
of Engineering Organizations

Jorge Alva Hurtado
President of the Peruvian
Association of Professional Engineers



Corruption in infrastructure projects has both a human and economic cost. Losses from corruption on construction projects are estimated 5% to 50% of project costs, depending on the country and sector. Global construction is predicted to grow by 70%, from US\$7.2 to US\$12 trillion, from 2010 to 2020 (Global Construction Perspectives 2010).

Most of this construction will take place in the Sub-Saharan African Region and it is CAC's goal to create zero tolerance to corruption in infrastructure by lobbying for use of management policies that use standards like the ISO37001 and other codes to make it impossible.

Martin Manuhwa
Chairman of CAC (Zimbabwe)

The objective of CAC is to drive the Engineering Ethics, Openness and Transparency Agenda for WFEO through establishing Anti-corruption Standards, Systems and Action Plans for our National Members.

CAC has four major themes that we use to organize our activities.

1. Partnerships, Co-operation, Global Alliances and Networking for Anti-Corruption Capacity Building
2. Lobbying for Anti-Corruption Awareness, Training and Development of Preventive Systems in Infrastructure,
3. Anti-Corruption Research, Projects and other initiatives,
4. Anti-Corruption Publications (webinars, newsletters, magazines).

The national member for Zimbabwe hosts the CAC, the Engineering Council of Zimbabwe (ECZ). It has a global presence and has vice presidents across all continents. It also has an advisory board that guides its operations and implementation of the strategic plan.

CAC aims for zero tolerance to corruption leading to the provision of safe and reliable infrastructure, an essential to a thriving economy.

The construction sector is infested with corrupt practices making it difficult for honest practitioners to enter the market due to prohibitive bribery and kickback costs. Those increased costs divert revenue from using higher quality materials to build safe structures, while also hindering future projects.

Corruption in the global construction industry is a huge economic burden, and has a major impact on least developed countries where money is diverted from projects that are intended to provide basic infrastructure such as roads, electricity, water supply, housing, hospitals and schools.

Clearly written, well-publicized, effectively enforced laws and safety codes will help curtail illegal practices, allowing the construction market to become a more open and competitive place and increasing reliability and security of physical infrastructures.



L. to R.: CAC Chairman Martin Manuhwa, the Zimbabwe Minister of Tourism and Hospitality Development Walter Mzembi and Permanent Secretary of the Ministry of Higher and Tertiary Education, Science and Technology Development Francis Gudyanga during the ACRID WFEO Anti-corruption Workshop in Victoria Falls, Zimbabwe, June 2017

Throughout the reporting period we have encouraged and supported CAC theme leaders to organize international webinars, workshops and seminars.

Examples of our training programs run by GIACC and the STC:

1. Anti-corruption training workshop to IACA, the UN International Anti-corruption Academy based in Austria was conducted by the chair in Uganda from the 3rd to the 9th of September 2016. A similar training was carried out in Victoria Falls during the ACRID conference in June 2017.
2. CAC Chairman spoke on "New Approaches and Proven Strategies in Combatting Corruption" at the World Justice Forum®, The Hague, Netherlands, 10th -13th July 2017.



L. to R.: Fadli Zon, Vice Speaker, Indonesian Parliament and Chair of the Global Organization of Parliamentarians Against Corruption (GOPAC), Raymond Ng, Director of Community Relations for the Hong Kong Independent Commission Against Corruption, Ms. Sreerupa Chowdury, Co-Founder of Bribe Hackers in India, Daniel Zovatto, Director for Latin America and the Caribbean, International IDEA [Chile], and Martin Manuhwa during the The World Justice Forum.



CAC Workshop Attendees during the ACRID Conference in Victoria Falls, Zimbabwe, June 2017

As stated by Archbishop Desmond Tutu, an Honorary Chair of the WJF, «The rule of law matters to all of us, to the entire human family (...) strengthening the rule of law is an essential ingredient to enhance justice, peace, and economic and social progress».

Past WJF speakers include: Afghanistan's President Ashraf Ghani; Chinese artist and architect Ai Weiwei; Iranian Nobel Peace Prize laureate Shirin Ebadi; former Shell General Counsel Peter Rees; UN Special Representative for the Prevention of Genocide Adama Dieng from Senegal; Harvard professor Andrei Shleifer; Stephen Breyer, Ruth Bader Ginsburg and Anthony Kennedy of the Supreme Court of the United States. Dr. Daniel Zovatto, Director of Latin America and the Caribbean, International IDEA, was the moderator for the panel.

3. Attaining the ISO37001 Anti-bribery support and finally having it passed as a requirements standard on 15 October 2016 was one of our greatest achievement. We were engaged in hosting Anti-corruption workshops every year at key conferences involving training of trainers and publicising the new ISO37001 by increasing the numbers of our members trained in that standard.

4. The CAC has conducted an infrastructure survey in Zambia and Zimbabwe. This is a pilot project which was awarded to WFEO by the Royal Academy of Engineering (UK). The aim of this baseline survey is to create future periodic anti-corruption index reports as well give anti-corruption recommendations for Governments, Corporates, Civil Society and the Federation of African Engineering Organisations (FAEO), and their regional Professional Engineering Institutions (PEIs).

This research on the Anti-corruption Index for Zambia and Zimbabwe was completed in July 2017. We thank the Royal Academy of Engineering (UK) for their generous grant which was part of the Africa Catalyst GCRF funding. The findings of this research will be published as part of our WFEO 50th Anniversary in 2018.

5. CAC had strong impact outside our country. We have held workshops in all the continents except Australia and America (where arrangements are in place to do so in the next two years). We have held conferences outside Africa and our themes cover both the developed and developing countries.

We also have had collaborative success with GIACC, ACET project and national members like ASME, Engineers Australia, ICE and a troupe of other keen volunteers. Since publication of GIACC's free on-line Resource Centre 66,432 organisations/individuals from 199 countries have visited 476,378 web-pages of the GIACC Resource Centre. Since publication of GIACC's on-line training module 3,969 people have completed the training module.

We were also involved in crafting strategic relationships with COST, GIACC, RAENG and other partners to advance zero tolerance to corruption. We have made significant progress on MoUs with partners like FIDIC, IBLF, and Integrity Action.

CAC is focused on SDG 16 and on the specific targets below:



16 PEACE, JUSTICE AND STRONG INSTITUTIONS



Target 16.5 - Substantially reduce corruption and bribery in all their forms.

Target 16.6 - Develop effective, accountable and transparent institutions at all levels.

Target 16.7 - Ensure responsive, inclusive, participatory and representative decision-making at all levels,

Target 16.8 - Broaden and strengthen the participation of developing countries in the institutions of global governance.

We have also designed action plans for COLLABORATION with other STCs and our partners the above SDGs and are preparing a log-frame of the Committee interventions in line with our strategy and resources. We expect other STCs to do the same such that we will have the full coverage of all the 17 Goals and the 169 targets as WFEO.

WFEO CAC – Delivery of the Agenda 2030 requires us to have an Action Oriented WFEO which plans for the future by having action plans to deliver the following Goals as well!



**S.S. Rathore,
Chairman of CIC (India)**

CIC shall support the WFEO and the engineering profession worldwide especially in developing countries by Propagation & Promotion.



A monograph on Cyber Security and IoT has been received from authors and is under review by the editorial board and a monograph on ICT in Smart Cities: Relevance to Developing Countries is under preparation.



CIC is regularly publishing an e-Newsletter: first issue in Sept 2016, second issue in March 2017 and third issue in September 2017.

Bilateral and Multilateral exchanges

Bilateral and Multilateral exchanges provide an opportunity for the host to discuss activities of the committee with other National members / International member / other organizations and solicit their cooperation in CIC activities.

A delegation of IEI attended ASCE convention at Portland, USA in October 2016.

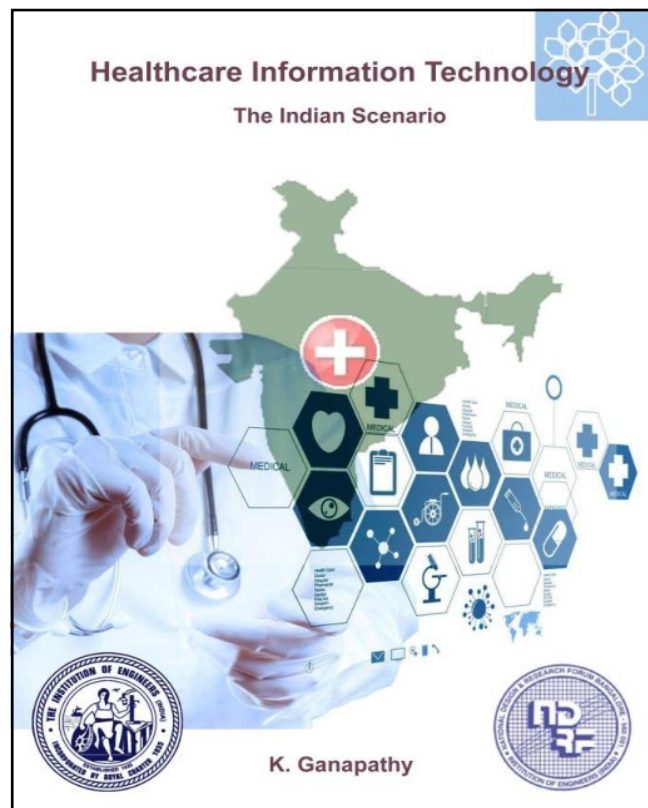
A delegation of IEI attended the WFEO Executive Council meeting at Lima, Peru in December 2016, where the Face-to-Face Meeting of CIC was held. Members discussed activities undertaken and the future plans including measurable outcomes.

Other Bilateral / Multilateral exchanges took place with FIESCA, FIEAP, Mauritius etc.

Future milestones

After focus on Asia, CIC's next geographical focus is the African continent. CIC further firmed up plans to hold an international seminar in South Africa in September 2018.

Other International Seminars are lined up in India in 2017 at New Delhi, Bengaluru and Kolkata.



The work of the CIC is related to the following UN SDGs:



2 ZERO HUNGER



A monograph on "ICT in Micro Farming" is under preparation. Authors have been identified, work has started and submission to the editorial board is expected shortly.

3 GOOD HEALTH AND WELL-BEING



CIC has worked on the crucial issue of health and wellbeing and has published a monograph on "Healthcare Information Technology" which covers healthcare information technology, telehealth, knowledge network, health informatics, electronic medical records, digital healthcare world, cloud computing in healthcare, privacy and security

issues and ehealth.

6 CLEAN WATER AND SANITATION



Discussions have been held with Water Management Forum of Institutions of Engineers, India and other such organizations regarding water issues including the crucial issues of conservation through micro irrigation systems, participatory irrigation management etc.

7 AFFORDABLE AND CLEAN ENERGY



CIC has been propagating "Canal top solar power plants as an innovative initiative" and has made presentation at various fora including WFEF-2016 at Beijing, China and highlighted its benefits including conservation of scarce land, reduction in evaporation losses etc.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



The Internet of Things (IoT) is emerging as a powerful enabler in many application domains, such as water and energy management, environmental monitoring, health, smart cities, smart industry and supply chain management. The IoT has the potential to address some of the most acute human,

economic and environmental needs and could be a game changer in achieving many of SDGs. CIC organized an international seminar on "Internet of Things" at Kuala-Lumpur, Malaysia which was attended by more than 100 delegates from 9 countries and included many students and young engineers.

11 SUSTAINABLE CITIES AND COMMUNITIES



An international seminar on "Information Technology for Smart Cities" was held at Ahmedabad. It was well attended by delegates from India and other countries. Also a monograph on "ICT in Smart Cities : Relevance to Developing Countries" is under preparation.



The Committee on Energy has adopted the UN's Sustainable Development Goal "Ensure access to affordable, reliable, sustainable and modern energy for all".

**Sam Grossman,
Chairman of CE (USA)**



CE Chairman Sam Grossman and CE Task Force leader Carsten Ahrens presenting the Study on Solar Energy during the CE meeting at the WECDRR 2016 in Lima, Peru, November 2016

Activities, Conferences and Reports

CE Chairman Sam Grossman spoke on June 19 at the Expo 2017 held in Astana, Kazakhstan: World Scientific and Engineering Congress "Energy of the future; innovative scenarios and methods of their implementation". Mr. Grossman topic was Transforming the World and Wasted Organic Materials. Convert waste products traditionally landfilled into pipeline grade biogas and other sustainable energy products.

This benefits farmers, producers and communities with:

1. Odor reduction
2. Reduce landfill waste
3. Reduce groundwater contamination and runoff
4. Reduce waste incineration
5. Reduce land application of solids
6. Reduce subsurface injection and liquid waste

CE launches two new Task Forces: one in Carbon Reduction Technologies and the other in Bio-Energy.

CE has posted the final report "Study on Solar Energy" - available in WFEO website - developed by The Solar Energy Task Group led by Prof. Dr. Carsten D. Ahrens.

Solar Energy is a proven renewable energy source and an ever-evolving technology.

Cost declines and technological advances are contributing to increase in distributed solar power production and multi megawatt field installations that can provide a source of energy to the World.

Why transform the World

Make beneficial use of resources considered to be waste products, lessen harmful greenhouse gas emissions due to landfilling of organics and reduce the need for fossil fuels. Creating a carbon-neutral fuel that has a long-term future.



Building facilities that **convert organic materials into pipeline-grade biogas** and other sustainable energy products. Feedstock varies from manure, industrial and food processing byproducts, and other agricultural waste.

2




Cost of Solar Energy systems have significantly dropped over the past few years giving families and businesses access to clean affordable energy.

In response to the importance of Solar Energy technology, CE's Task Force created a "Study on solar energy" which discusses types of Solar Energy, Production, Economics, Influence on Climate Change and Storage.

World Federation of Engineering Organisations
WFEO

Standing Committee Energy
Task Group Solar Energy

Study on Solar Energy



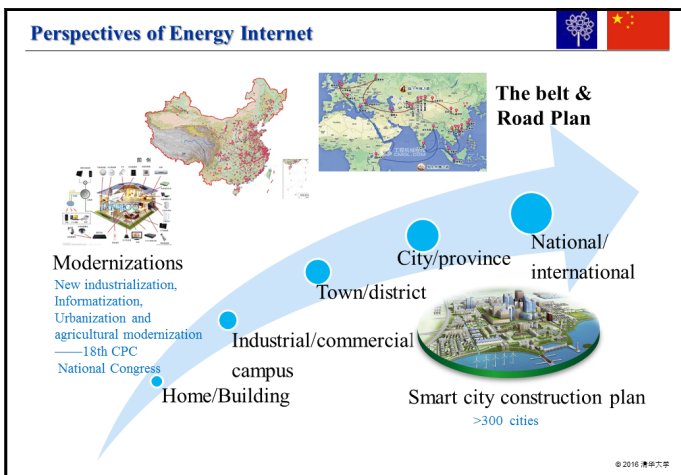
Lima 2016



Participants of the World Future Energy Forum (WFEF 2016), Beijing, China, June 2016

The World Future Energy Forum 2016 (WFEF2016) held on the 29th June 2016 at the National Convention Center in Beijing, China, was chaired by the Committee on Energy's Vice President of Asia/Pacific Region Ruomei Li. Sun Hong-Bin presented the report "Energy Internet - Effective Way Toward Sustainable Future" - available in WFEF website.

The theme of WFEF2016 was "Affordable, Reliable and Sustainable Energy for the Future".



WFEF2016 was jointly organized by CE and the Energy Internet Research Institute (EIRI), Tsinghua University, in collaboration with Chinese Society for Hydropower engineering (CSHE) and Hohai University, supported by Sungrow Power Supply Co., Ltd. and The Jiangsu Institution of Engineers(JSIE).

WFEF2016 is the second WFEF-CE event hosted by China, since ESEDC2013 in Guangzhou.

With the No.7 of the UN SDG17 goal as the central topic, "Ensure Access to Affordable, Reliable, Sustainable and Modern Energy for All", the WFEF2016 is to provide a platform for outstanding engineers from various regions around the globe to share their opinions, solutions and practices on energy issues.

This forum is mainly focused on renewable and clean energy technology, energy storage, energy efficiency, energy availability for remote and poor areas, energy strategy and policy, social and environment impact of new energy development, IT technology and smart grid, energy internet and so forth.

As reported from the World Future Energy Forum 2016 (WFEF2016) Beijing, China, sustainable energy development is a common global goal; however, the realization requires each country to adopt specific strategies considering their own conditions.

Advantages of this forum were:

- 1) The speakers were from most regions of the world. Technical experts that were also regional representatives.
 - 2) Speakers had backgrounds of engineering. They know not only "what" and "why", but also "how" to put the idea into practice. We all have the dream of a green future, but to make the dream a reality depends on an engineers' efforts.
- The topics and discussions included technology, marketing and national policies. The development of green energy cannot move ahead without social progression.

CE has adopted the UN's Sustainable Development Goal «Ensure access to affordable, reliable, sustainable and modern energy for all».



7 AFFORDABLE AND CLEAN ENERGY



Two of the Target Goals are the Committee's focus for the next 3 years:

Target 7.1 - By 2030, ensure universal access to affordable, reliable and modern energy services;

Target 7.2 - By 2030, increase substantially the share of renewable energy in the global energy mix. This is supported by new Task Force on Carbon Reduction Technologies and a new Report on Bio-Energy.



Committee on Education in Engineering (CEIE)



The work of the committee is a continuing process especially for engineers till the end of a career. The theme of the committee is sustainability, mobility and university – industry relations. It is fully aligned with the WFEO strategic plan.

We should continue the work on the university-industry relations and we are doing it through the work of our Vice Chair of the Committee, and we are working on the Mobility of engineers through the IEA committee in WFEO.

**Abdul Menhem Alameddine,
Chairman of CEIE (Lebanon)**

Engineering Education for Sustainable Development

CEIE recognizes the rapid changes in engineering education and the challenges of maintaining sustainability in the field. All this was in the 10th World Congress on Engineering Education held in Beirut, Lebanon, 29 – 30 October 2015.

The 10th World Congress aims to emphasize that engineering is the primary key for sustainable development in all fields and that the world needs to activate sustainable development with special focus on:

- social, economic and environmental impacts,
- solve health and environmental problems,
- search for ways to create jobs through the development of the engineering curriculum at universities,
- raise level of electronic infrastructure to conduct the necessary research to enable sustainability in the industry, and
- lift barriers to find the best practices for an integrated society.

There were speakers from around the world and from Lebanon, each looking at sustainability from his point of view. We listened to the authors presenting highly professional papers tackling sustainability in all fields of engineering.

The congress suggested solutions and recommendations that can elevate the quality of education, especially in the underdeveloped countries through support from the international organizations.

Also, the congress recommended research and development programs, and suggested that work should be directed towards the integration of local needs in the engineering programs in each country, with the recommendations from the international accreditation agencies to fulfill the main theme of our committee, mobility of engineers.

The Congress recognizes the participation of the Deans of the Lebanese Universities for their support. No other Congress in the World could have that great number of Deans from Engineering Universities overseeing a Congress in Engineering Education.



CEIE Chairman Abdul Menhem Alameddine in the opening ceremony of 10th congress of WCEE, Beirut, Lebanon, October 2015

The 10th World Congress emphasized on main issues concerning Sustainability development in engineering education. The declaration emphasized on the following issues:

1. We acknowledge the need to develop and implement new curricula and teaching methods, when information and data are growing exponentially. This will enable us to provide graduates with the necessary knowledge and skills they need to respond to problems they must deal with in a changing technological environment.
2. We are committed to developing both local and global solutions to engineering problems.
3. We affirm that problems and solutions transcend geographic boundaries. New disciplines are emerging and traditional definitions of disciplines should be rethought.



CEIE meeting during the WECDRR 2016 in Lima, Peru, December 2016



Officials at the 10th World Congress on Engineering Education (WCEE), Beirut, Lebanon, October 2015

4. We recognize that engineers, more than ever, must be prepared for ethical professional practice in the new environment.
5. Engineering educators are prepared to work more closely with their governments and engineering companies, practitioners, and engineering societies to redefine the needs for engineering education, training and practice.
6. We are committed to working together with these stakeholders to redefine graduate attributes in order to meet the needs and the demands of our rapidly changing society. This will influence the curriculum and teaching methods we develop.

The work of the CEIE is related to the following UN Sustainable Development Goals:



- Explore connections and relationship between SDG #4, education, and the other SDGs. Look for ways to leverage our efforts in collaboration with other WFEO STCs.

- Learn about the UN Youth Education Ambassadors Program (YEA), and see how we may collaborate with them to provide education to promote workplace skills in targeted areas.
- Conduct a survey of the CEIE committee members, soliciting information regarding how each member plans to contribute to the achievement of the UN SDGs in general and to SDG #4 in particular.



Marwan Abdelhamid at the 10th World Congress on Engineering Education (WCEE), Beirut, Lebanon, October 2015



- Four members of the committee will participate to the ASCE International Conference on Sustainability in New York, 2017.

- In 2016, the 19th issue of IDEAS was delivered to all members of the WFEO and was posted on WFEO website. IDEAS is the official publication of the committee that is published every 2 or 3 years. The next issue #20 will be published after World Engineers Convention (WEC 2019) in Australia.



Committee on Women in Engineering (WIE)



Women should rise up and take what belongs to them as they will not be called to take it.

**Valerie Agberagba,
Chairwoman of WIE (Nigeria)**

The Committee for Women in Engineering (WIE) has given women engineers across different continents an opportunity for knowledge sharing across all disciplines of engineering thereby positioning the women engineer for better professional delivery.

WIE acts around three themes:

- Engineering Workforce Diversity,
- Leadership and Empowerment,
- Engineering Strategic Indicators.

International Women's Day 2016

March 8th is the United Nations International Women's Day (IWD), a day set aside by the UN to celebrate Women all over the world.

The IWD's committee organized the 2016 edition in collaboration with the Federation of African Engineering Organization (FAEO), WIE and the Association of Professional Women Engineers of Nigeria, Abuja Chapter. We had representation from the African Union Science and Technology office, The Academia, Government and Industry. It was organized as one-day summit in two parts:

The first session was a formal opening with presentations from invited speakers on various topics that bothered on the theme and focus. They all emphasized on the need for women to rise up and take what belongs to them as they will not be called to take it.



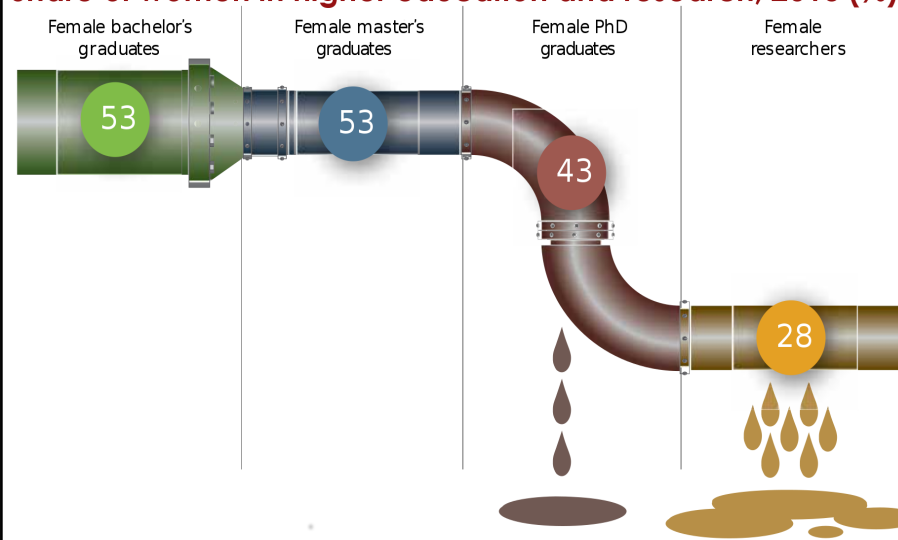
WIE Chairwoman Valerie Agberagba speaking at the International Women's Day in Africa, Abuja, Nigeria, March 2016

The second session was a workshop on leadership & empowerment.

60th Session of the Commission on the Status of Women (CSW60)

The CSW meetings are the UN's largest inter-governmental meeting to focus on its impact on women and girls. The meetings are crucial to progressing Goal 5 of the UN Sustainable Development Goals (SDGs) and achieving the 2030 Agenda.

Share of women in higher education and research, 2013 (%)



Source: UNESCO Institute for Statistics estimates based on data from its database, July 2015

WIE was at the 60th Session of the Commission on the Status of Women (CSW60) at the UN headquarters in New York, 14-15 March 2016. This was the first time WFEQ was invited to participate and it proved to be an impactful event. WIE was represented by Stacey Del-Vecchio, the Committee Secretary.

The Commission consisted of numerous reports prepared by UN Women, including an emphasis on two themes: the priority theme (women's empowerment and its link to sustainable development) and the review theme (the elimination and prevention of all forms of violence against women and girls).

While these themes hit at the heart of severe issues women and girls face around the world, there was a session that was closer to the work done by WFEQ.



Stacey DelVecchio and Marlene Kanga at the CSW61, NewYork, March 2017

The WECDRR 2016 meetings

In December 2016, the WIE meetings during the WECDRR 2016 (World Engineering Conference on Disaster Risk Reduction) in Lima, Peru saw reporting on the three themes.

Workshops on Diversity and Inclusion and also on leadership and empowerment were held.

Theme 1: Engineering Workforce Diversity, had three E-meetings and planned the workshop for Peru. This was to help set a programme across regions that will begin in Taiwan China.

Theme 2: Leadership and Empowerment also had discussions and planned the 2nd Peru workshop.

Theme 3: Engineering Strategic Indicators. Theme leader Ania Lopez from Italy carried out some work on Strategic indicators for Europe which was presented at the meeting in Lima.

International Women's Day 2017

The 2017 edition of the International Women's Day was celebrated across some member states.

The committee therefore recorded a message that was sent to all members of the Committee to use in the respective programmes.



The workshop «Diversity & Inclusion in Engineering» during WECDRR 2016 in Lima, December 2016

61th Session of the Commission on the Status of Women (CSW61)

As last year, WIE was at the 61th Session of the Commission on the Status of Women (CSW61) in New-York, 13-14 March 2017. The Committee was represented by the Secretary, Stacey DelVecchio and WFE0 President-Elect Marlene Kanga.

On the opening day of CSW61, Marlene Kanga spoke at the high level forum organised by UNESCO on the importance of engineering and science in empowering women in a technology-led world of work.

Regional meeting

As part of an all year programme, The committee decided at the WECDRR meetings in Peru to have regional meetings quarterly. The Europe meeting held in May in Amsterdam was hosted by the Society of Women Engineers at the SWE Europe Conference.

The work of the WIE is related to the following UN Sustainable Development Goals:



5 GENDER EQUALITY



There has been many activities by stakeholders on Gender Equality. However, we have observed that more work needs to be done for women in Engineering and Technology.

Hence, across nations programmes that will easily interest girls and get them participating in science

are being planned as against just having career talks. So plans are to expose students to careers rather than career choice.

6 CLEAN WATER AND SANITATION



The committee outlined six of the goals for participation but will be starting with goal No 6 on Water and Sanitation. We are discussing with UNESCO, Nigeria Office. We will liaise with the Committee on Engineering and Environment to do this project.

This project is intended to accelerate access to safe excreta disposal, good hygiene practices and safe water supply in the communities identified. One obvious output expected from this intervention is the emergence of more Open Defecation Free communities with more and more people gaining access to safe means of excreta disposal and visible improvements in environmental health.

This Project requires the development and implementation of strategies and plans to achieving behavioural change among 100% of the population leading to putting an end to open defecation in project communities and LGAs.



CEIT is dedicated to be a leading international comprehensive platform for engineering professionals from multi-stakeholders to: Identify the next innovative technologies for sustainable development, Share the innovative engineering experience in building a sustainable society, Enhance the national and international collaboration among multi-stakeholders to promote the innovative technology.

Gong Ke,
Chairman of CEIT (China)



CEIT Chairman Ke Gong [center] in a roundtable talk during WIC 2017

World Intelligence Congress (WIC 2017)

CEIT supported to organize WIC 2017, which has been held in Tianjin, China, from 29 to 30 June 2017, the highest standard and first international AI convention in China. WIC 2017 focused on changes and opportunities brought by AI technology and its application to make a sustainable world, publish top-notch smart technology achievements, gather industry development factors and facilitate investment and financing matchmaking.

Representatives of renowned research institutions (Oxford University, Karlsruhe Institute of Technology, Stanford University, Nankai University, etc.), enterprises (Google, GE, Alibaba, Baidu, IBM, Lenovo, LinkedIn, etc.) and academies from all over the world attended WIC to exchange ideas on development trend, share cooperation fruits, and make blueprints for future applications.

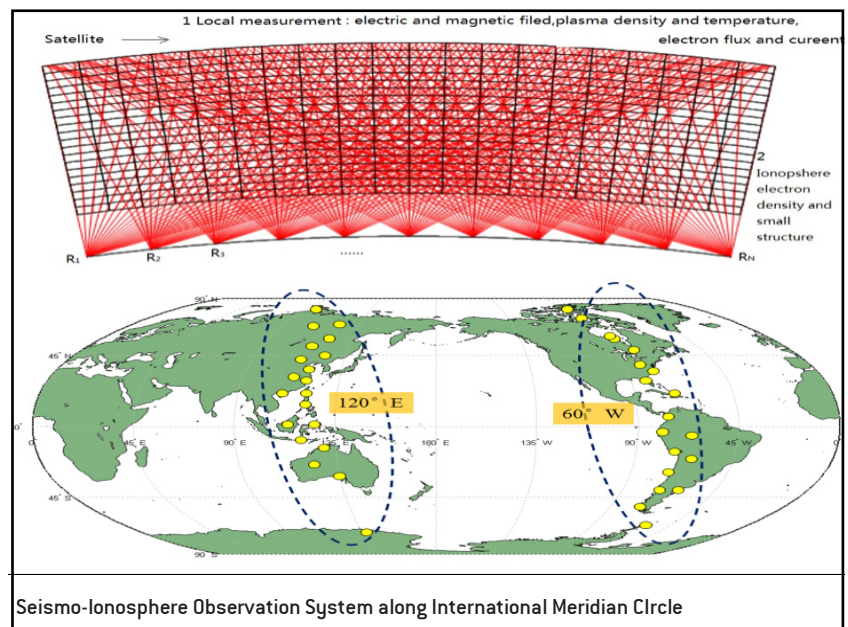
WFE0 President-Elect Marlene Kanga addressed on the convention. Chair of CEIT, Professor Ke Gong gave a speech on the convention.

Initiative for Earthquake Prediction and Disaster Mitigation from Space

A lot of examples indicate that there is interrelation between earthquake and ionosphere, which introduces the development of earthquake electromagnetic satellite. CEIT hosted a series of workshops on Big Data and Seismo-ionospheric precursors for searching and promoting the Initiative for earthquake prediction and disaster mitigation from space. A report was finished on earthquake prediction and disaster mitigation from space both in English and Chinese.

CEIT proposes to invite all WFE0 members, STCs especially the Committee on Disaster Risk Management to work together to promote the initiative, collaborating with outstanding engineers in the field of earthquake prediction and disaster mitigation, contributing to Safe and Secure Society and Sustainable Society.

Chair of CEIT, Prof. Ke Gong gave a keynote speech at the plenary session of WECDRR 2016 to suggest launch a global initiative for earthquake prediction and disaster mitigation from space for the first time.





First new CEIT meeting during WECDRR 2016, in Lima, Peru, December 2016

WFEO-CEIT actively involves influential technical events of cloud computing and big data

Influential events were co-organized by CEIT to expand influence of CEIT as well as to promote innovative technologies and engineering of them.

The 8th China Cloud Computing Conference (CCCC) and 9th CCCC were held at China National Convention Center in Beijing. CEIT co-organized CCCC with the Chinese Institute of Electronics as the sponsor.

Cloud Computing is a key ICT for SDGs due to its ability to lower the consumption of power and to minimize usage of resources. Several thousands of scientists, engineers and businessmen came to share and communicate on the topics on promotion, applications of Cloud Computing.



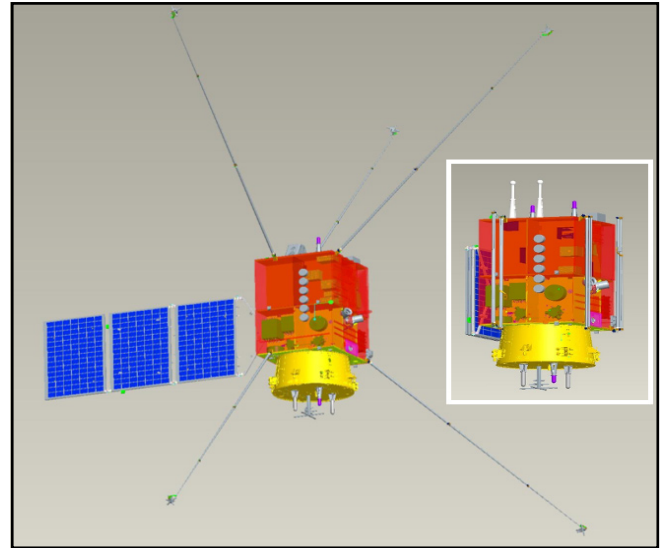
Ke Gong addressing the 8th China Cloud Computing Conference 2016

Professor Ke Gong gave keynote speeches on engineering innovation for SDGs and acted as Chair of the organization committee of CCCC. In July, 2016, CEIT also co-organized Big Data Application Congress of China. Experts shared ideas on the topics but not limited to the best engineering practice of Big Data, and the challenges of the implementation of Big Data.

Delphi Study on Most Important Innovative Technologies for SDGs

In order to identify the most important innovative technologies for SDGs, several rounds of Delphi Studies are conducted among experts and officials in WFEO until most reach a consensus.

Two rounds of Delphi Study have been done. A future round will be done to get the final focus on most important innovative technologies for SDGs.



International Research Project on China Seismo-Electromagnetic Satellite (CSES)

WFEO officials visited CAST and CEIT in 2016 and 2017. First member meeting was held in Lima, Peru in December 4, 2016. Around 20 members from nearly all WFEO main regions attended the meeting. 21 members were recruited to WFEO-CEIT till November 11, 2016. The CEIT Strategic Plan has been completed, revised and approved in March 2016.

CEIT Secretariat is set up with support from CAST and 3 full-time secretaries.

The work of CEIT is related to the following UN Sustainable Development Goals:



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



Cloud Computing, Big Data, Artificial Intelligence are attracting more and more researchers and investment. Innovation in these fields are spurred. New sustainable industries are created and will explore in the near future, which bring lots of job opportunities.

11 SUSTAINABLE CITIES AND COMMUNITIES



IoT helps to collect data from different infrastructures in the city. Big data technology and cloud computing utilize the data collected from IoT to intelligently deliver clean water, dependable power, safe gas, and efficient public lighting. And as they free up resources, they are able to invest in other services to improve quality of life.



Wise integrated decisions in the present creates a sustainable future that can be enjoyed in peace by all citizens of the world: This should remain the essence of all Capacity Building Initiatives

Yashin Brijmohan,
Chairman of CECB (South Africa)

CECB under the Chairmanship of Yashin Brijmohan has continued with the work and developed a new strategy for the term.

The themes remain:

- Globalisation and Mobility of Engineering Professionals;
- Developing Countries;
- Developed Countries;
- New Technologies.

To create, develop and maintain a sustainable engineering related work force in all countries, there is a substantial need to mobilise expertise to ensure that this goal is achieved. This involves informed decision makers in education and training, Governments at all levels and in the private sector.

CECB has hence assisted countries to engage at all levels of capacity building to effectively create sustainability and for developing countries to have an equitable place in the global marketplace, by means of suitable and appropriate capacity building initiatives.

New themes were introduced which include school levels, higher education, young professionals, and professional development for the working professional.

The committee has developed, supported, and implemented several projects and programmes and its success is seen in International partnerships that have taken ownership of these projects, which have an impact and support the SDGs.



CECB Chairman Yashin Brijmohan at the International Forum on Engineering Education, Beijing, China, May 2017

CECB Compendium

The work of the compendium has now reached its completion, and was one of the primary focus points of the last term.

The guideline has been published in English as the official version. The success of the Compendium remains largely dependent on submissions from the broader WFE0 community and is now in the process of handover to the WFE0 operations in Paris.

UNESCO Africa Engineering Week

One of the committee's key projects, The UNESCO Africa Engineering week (AEW) has attracted support from UNESCO and several partners. The week focuses on capacity building initiatives, amongst other themes. The activities during AEW has increased the visibility of engineering and its role in sustainable development, to encourage students to study engineering by supplementing STEM curriculum with practical engineering applications, and to incite more African countries to participate.



Participants of the FAEO Conference and UNESCO Africa Engineering Week, Uyo, Nigeria, Nov. 2016

WFE0 is also given a priority seating at these events, given its leading role in this project with the WFE0 committee for the UNESCO Africa Engineering leading the strategic committee comprising of Chairs of the WFE0 Standing Technical Committees in Africa, the President of the Federation of African Engineering Organisations (FAEO) and the committee been chaired by the Chairman of CECB.

AEW was a great success since its inception with the International events in 2014 in South Africa, 2015 in Zimbabwe, and 2016 in Nigeria. In some countries the week resulted in goals to drive capacity building.



Appointment of Governing Board Members for the UNESCO International Centre on Engineering Education, Beijing, China, May 2017

Some of these goals have resulted in further capacity Building Projects.

The event in Nigeria in 2016 built on the AEW, and hosted the first FAEO conference which had over 4200 delegates with the leadership representation from more than eight Engineering Institutions from countries in within Africa.

The regional event which involved Southern African Countries took place in South Africa, and enjoyed strong representation from government, industry, and professionals in the region.

The event was attended by several countries in Southern Africa, with a strong support from the Southern African Federation of Engineering Organisations, a regional body of FAEO as well as UNESCO.

The Capacity Building Programme for Africa and Africa Catalyst

CECB has produced an outline of the capacity building programme for Africa which includes amongst others assessment of institutions against international accords, numbers and needs studies as well as supporting intra Africa arrangements for capacity building.

CECB has developed a funding proposal for the numbers and needs study within the Southern African Region, which has been supported by the South African Department of Science and Technology, and allocated to a service provider in the region for implementation.

CECB also acknowledges the funding received through the Africa Catalyst project from the UK Royal Academy of Engineering, and has worked in partnership with Southern African Federation of Engineering Organisations.

The work includes alignment projects on accreditation of Institutions in Mauritius, development of the CPD system in Botswana, capacitating engineering institutions in Swaziland, development of data management and data capturing tools for the region, supporting the development of FAEO structures by capacitating their electronic areas, and websites in the SAFEQ Region, as well as data collection and validation in Malawi, Zambia, Zimbabwe, Seychelles, and Madagascar.

Furthermore, the goal of the committee in the above mentioned region is to assist SAFEQ to consolidate all capacity building initiatives

The committee Chair has also been appointed onto the Board of the UNESCO Centre for Engineering Education, which had the inauguration meeting in June 2017 where he also represented WFEO on matters of CB, specifically addressed at Engineering Education which remains a focus area for the committee.

The plans of interface and support of CB has created a framework for capacitating the Engineering workforce to adapt itself for what is now commonly known as the 4th Industrial Revolution where the committee will build initiatives. This also creates a platform for support integration across WFEO committees. The existing work with the Africa Catalyst and the CB Programme for Africa will continue in an alliance approach with various organisations.

The committee's projects have impacted and either directly or indirectly several of the SDGs, through mobilizing society, governments, Professional Society and Institutions to develop Engineering Capacity.

The result of Engineering Capacity Building is a key component to ensure no poverty, zero hunger, good health and well-being, clean water and sanitation, affordable and clean energy, and sustainable cities.

The work was achieved through working closely with Women in Engineering to address Gender Equity, and supported Developing Countries which would support economic growth, and reduce inequalities.

The focus on building quality Education in Engineering remains a focus. The success of the committee has largely been built on partnerships to achieving the goals.

The work of the CECB is related to the following UN Sustainable Development Goals:





The impacts of climate change will have a profound and long-lasting effect on our planet. Engineers have a crucial role to play, not only in adapting our infrastructure and behaviors to cope with future climatic uncertainty, but also in reducing the carbon used in the creation, operation and use of our infrastructure systems.

**Jean Venables,
Chairwoman of CEE (UK)**

CEE enables WFEO and the global engineering profession to support the achievement of the UN Sustainable Development Goals through the development, application, promotion and communication of:

- Environmentally sustainable engineering practices and technologies;
- The adaptation of infrastructures to the impacts of a changing climate;
- Assessing and promoting clean technologies and engineering practices to mitigate climate change;
- Engineering perspectives on the international elements of the agricultural supply chain to United Nations agencies and commissions, national members of the Federation and other international non-government organisations; and,
- Developing guidelines for practicing engineers on responsible environmental stewardship and sustainable practices in various areas of practice including mining.

Following the CEE meeting on 28 November 2015 in Kyoto, Japan, the WFEO Executive Council accepted the proposal from the Institution of Civil Engineers (ICE) to provide the secretariat and chairman of WFEO's CEE.



CEE Chairwoman Jean Venables during WECDRR 2016 in Lima, Peru, December 2016

As with any transition there were challenges that needed to be overcome. However the CEE Task Groups have made strong progress over the last two years. Some of the important highlights are:

- Participation at UN Conference of Parties events throughout this reporting period – 2015, 2016 and 2017 – holding events on both climate change mitigation and adaptation;
- A collaborative research project between the Danish Society of Engineers, the UK's Institutions of Mechanical Engineers, Institution of Engineering and Technology, and ICE. The results of which will form the latest National Energy Plans Good Practice Framework which will be published on the participating groups and WFEO websites in 2018;
- Development of a workshop to be held in Benin on the engineering role in providing food and water security;
- Collaboration with the Pan American Health Organization to develop a series of capacity-building webinars on mining for government officials in Latin America where the informal mining sector plays a very large role in many communities;
- Continued promotion of the WFEO Codes of Practice for Sustainable Development and Environmental Stewardship for Engineers and Principles of Climate Change Adaptation for Engineers.
- Participation in the Global Engineering Congress to be held at ICE headquarters in London in October.



Darrel Danyluk and David Lapp holding the side event "Infrastructure Interdependencies, Climate Vulnerabilities: Engineering, Legal, Social" during the UNFCCC Bonn Climate Change Conference on 16 May 2017



CEE meeting during WECDRR 2016 in Lima, Peru, December 2016



CEE meeting during WECC 2015 in Kyoto, Japan, November 2015

The work of the CEE is related to the following UN Sustainable Development Goals:



2 ZERO HUNGER



Attendance at the Farming First Steering Committee Meeting Dec 15, 2016 in Paris where the discussion centered on the following campaigns:

Science & Innovation – key learning was that finding a partner with a broad network and seasoned in house communicators considerably boosts the

reach of the product.

Climate-smart agriculture – key learning was having additional budget to promote the content at the end is important for web traffic increases.

I Am Agriculture – this social media led campaign that was well received by supporters and young people, can perhaps build on this momentum and format in 2017.

6 CLEAN WATER AND SANITATION



The ministry of agriculture of Benin has agreed in principle to host a workshop in 2018 on engineering's role to achieve food and water security in Africa.

Farming First coalition and the World Farmer Organisation and some private individuals express their support to this event.

11 SUSTAINABLE CITIES AND COMMUNITIES



Ongoing promotion of the WFE0 Model Code of Practice for Sustainable Development and Environmental Stewardship.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION



In 2016, the Task Group on Sustainable Mining continued to focus its efforts around outreach and capacity-building, with a specific focus on the informal/artisanal mining sector. Task Force members ran workshops on artisanal mining in Bangkok in Thailand and in Medellin in Columbia, and at the World Bank in Washington DC.



13 CLIMATE ACTION



- COP-21 Paris in December 2015 – WFE0 Student Delegates Benefit from COP-21 Attendance

In December 2015, the UN held the 21st Conference of the Parties meeting in Paris. CEE delegation included students from the Schulich School of Engineering, University of Calgary, Canada.

They found the experience extremely valuable in increasing their understanding of the politics of climate change alongside the practicalities.

- UNFCCC SBSTA-44 Bonn in May 2016 (Subsidiary Body for Scientific and Technological Advice)

On May 24th, the WFE0 Side Event: Model Code of Practice: Climate Change Principles for Engineers was presented to UNFCCC delegates and highlighted the role engineers need to play in addressing the impacts of the changing climate.

- UNFCCC mid-year negotiations in Bonn

In May 2017, three WFE0 delegates attended the UNFCCC mid-year negotiations in Bonn where in addition to attending UNFCCC sessions we held a mini side event (1-hour) and manned an WFE0 Information exhibit for the 2-week period.

- COP 23 in Bonn

Groups from both the climate change mitigation and adaptation Task Groups will be attending COP23 in Bonn in November 2017.

- National Energy Plans Good Practice Framework

Throughout 2017, there have been regular steering group meetings, and a plan of work to develop the latest framework report has been put into action.

The Group identified a number of practitioners and academics that had been involved in producing an energy plan for their country. Interviews were carried out throughout 2017 to capture best practice and lessons learned in energy plan production.

This research will go into the latest National Energy Plans Good Practice Framework which will be publish by December 2018.

- Global Calculator

The Global Calculator is an open-source model of the world's energy, land and food systems that allows you to design your own version of the future up to 2050 and see the implications for the climate.

In September, Task Group members met with members of the UK Government's Department for Business, Energy and Industrial Strategy and of Cambridge University to offer ongoing support in the further development of the global calculator.



The young engineer brings the huge and impactful advantage of early exposure to nascent technologies & systems, tools and trainings towards addressing pressing global issues.

**Zainab Garashi,
Chairwoman of YEFL (Kuwait)**

YE/FL gathers young engineers, students, and council members as official members from national engineering associations representing their country.

International Strategic Forum - «Stakeholder Collaboration for Global Integration of Youth in Industry»

The Main Themes covered were:

- Technical and Professional Competence Development
- Soft skills Development
- Coaching and Mentorship Programs
- Entrepreneurship and Start-up Programs
- Sensitization on Burning Global Issues

The power of youth is the strongest force driving global markets, businesses and technologies! Every year, there seem to be an increase in the pace of growth in development and application of innovation to solving both well-established problems and problems people never knew existed.

The brainbox behind these giant strides are young engineers who are daily extending the limits of existing technologies and to whom 'Impossible is nothing!' We are the young engineers! We enjoy the beauty of standard education curricula in our colleges and universities, and these fairly-developed structures provide us the indispensable foundation and building blocks for venturing into newer ways of thinking.

In the last few decades, we have changed the course of our world and shifted the limits of possibilities by applying our minds to develop systems that would have been described as wishful thinking.

Our innovative tendencies and energetic disposition makes us see opportunities in what the society calls challenges. The pace of technological development in our generation has been unprecedented, and we are yet unsatisfied as we desire more opportunities for self-expression.

The availability of these opportunities is the lever we require, as we strive daily to unpack the huge potentials that lie latent in our hearts and minds. If our world is serious about realizing the sustainable development goals, the unexpressed ingenious minds of young engineers around the world presents a potent lever!

At the WFEO-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 facilitating communication among all stakeholders involved in young engineer's development globally for the benefit of humanity.



YEFL Committee meeting during WECC 2015 in Kyoto, Japan, November 2015

To realize this goal, The YEFL STC has organized the International Strategic Forum – “Stakeholder Collaboration for Global Integration of Youth in Industry” in Kuwait (Middle East) and Japan (Asia Pacific) in 2015, followed by Peru (South America) in 2016, with Rome (Europe) for 2017, and Africa later.

The outcomes from these events have helped to sharpen the STC objectives and to improve clarity on the issues we plan to confront. These issues are evolving and require a continuous update of the STC strategy to tactfully tackle them.

These forums help 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 represents the global young engineer's voice.

This position paper articulates the enablers of the unconstrained expression of young engineers in industry and in contributing to realizing the sustainable development goals. In the long term, we believe that the cross-pollination of young engineers' ideas from every part of the world will also enable the reduction of the current imbalance in technology and living standards between developed and developing countries.

Chair of YE/FL was invited by the UNESCO regional Bureau for science and technology in the Arab states – Cairo office – to participate as a panelist in the plenary session on the “Transfer and localization of knowledge and technology in the Arab region” within the Arab Week for Sustainable Development which was held from 14 – 18 May, 2017 in Cairo, Egypt.

The focus of the participation was to bring the view of young generation during this event.



Zainab Garashi speaking at the plenary session on the “Transfer and localization of knowledge and technology in the Arab region” within the Arab Week for Sustainable Development, Cairo, Egypt, May 2017

We end this report with a clarion call on all stakeholders and policy makers in industry, corporate organizations, governments and NGOs to continue to partner with us to give young engineers all over the world the support and enabling environment to translate our ingenuity into working systems for tackling the burning issues currently threatening our humanity and our world!



YEFL workshop during the WECC 2015 in Kyoto, Japan, November 2015

The work of the YE/FL is related to the following UN 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; and

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

8 DECENT WORK AND ECONOMIC GROWTH



YEFL STC provides the platform

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

- Enables the cross-pollination of ideas thus enhancing economic growth, reducing unemployment and enabling decent work for all young engineers.

WFEO-UN Relations Committee (WURC)

WURC's main objective is to put the Engineering contribution at the forefront of the Major Group's international efforts towards fulfilling feasible programs and measures with a focus on sustainable development, climate change, environmental issues, and disaster risk reduction.

WURC was created in September 2011 with the mission of acting as the WFEO interface with different UN agencies as well as intergovernmental organizations requiring engineering content, systems, methodologies and analyses.

Until the creation of this Committee, the interface with UNCSD and ECOSOC was carried out by the Committee on Energy. It involved in particular the participation of WFEO at the UNCSD-14 to UNCSD-19 meetings.

WURC concentrates its activities on actions developed within ECOSOC, UNCSD, UNEP, UNISDR, UNFCCC, UNDP, UNESCO, WMO, OECD, IAEA and the World Bank.

WURC activities include those related to the Rio+20 Conference and Post Rio+20.

The Chair of this Committee acts as WFEO liaison with the UN, and leads the WFEO representation at the Scientific and Technological Communities Major Group that takes part in the many UN bodies.

WURC represents the global engineering community at the UN through the Major Group Scientific and Technological Community, which includes WFEO, the International Council for Science (ICSU) and International Social Science Council (ISSC).



UN Major Group for Scientific and Technological Community



World Federation
of Engineering
Organizations



INTERNATIONAL
COUNCIL
FOR SCIENCE



international social science council

Achieving the 2030 SDGs will only be accomplished with strong involvement of the Scientific and Technological Community (STC) with other MGs and Stakeholders.

Turning 17 SDGs into actions that achieve them requires STC expertise to research, plan and implement cost-effective, feasible solutions with policy and decision-makers, financial institutions and other MGs and stakeholders.

Science and engineering are complementary with engineering translating the findings of science into actions through technology to the benefit of, and service to the whole of society.

The UN STC is using a collaboratively developed methodology to systematically identify and score interactions across the 17 SDGs and their targets.



WURC is the portal for engineering to speak with one voice to governments and UN. WURC is the focal point for the WFEO Standing Technical Committees' activities with UN 17 Sustainable Development Goals. WURC welcomes participation of all.

Join and be a strong and unified engineering voice to serve society and protect the environment.

**Reginald Vachon,
Chairman of WURC (USA)**

WURC has conducted side events at:

- COP-21 Engineering Climate Change Summit in Paris on 8 Dec 2015.

- Second Multi-Stakeholder Science, Technology and Innovation Forum at the UN on 15 May 2017.

- UN High Level Political Forum in July 2017 on SDG #9 Industry, infrastructure and Innovation.

- The UN on Science, Engineering and Technology for Smart, Sustainable Cities and Human Settlements at the Second M STI Forum on 15 May 17. This event was conducted with ICSU and ISSC under the lead of WFEO.

- all MTI Forums and HLPF meeting through 2030.

WURC assisted the Committee on Women in Engineering to attend the UN 60th and 61st Commission on the Status of Women at the UN HQ in 2016 and 2017.

The Chair of WURC is a member of the steering committee for the UN High Level Political Forum (HLPF) which meets annually. The HLPF is reviewing annually the progress on the UN SDGs through 2030.

Chair of WURC Reginald Vachon represented WFEO at the first HLPF in and Eng. Ruomei Li, member of WURC and national member of WFEO Executive Council, was in attendance at the Meeting in New-York of the UN from 10 to 20 July 2017 at the second HLPF.

WURC has made great progress with the UN based on Eng. Jorge Spitalnik laying the foundation as the first WFEO representative at the UN Commission on Sustainable Development in the last decade and thereon at the Rio+20 Conference that led to the creation of the HLPF.



HIGH-LEVEL POLITICAL FORUM ON SUSTAINABLE DEVELOPMENT

Eradicating poverty and promoting prosperity in a changing world

10-19 July 2017 | UN Headquarters in New York | #HLPF #GlobalGoals



Reginald Vachon at the fifth High-level Political Forum on Sustainable Development (HLPF), UN HQ in New-York, July 2017



Reginald Vachon, Chair of WURC, opening the side event on Science, Engineering and Technology for Smart, Sustainable Cities and Human Settlements during the second Multi Stakeholder Forum on Science, Technology and Innovation, UN HQ in New-York, May 2017



Projection of the 17 Sustainable Development Goals on the United Nations Headquarters during the 70th Anniversary of the Institution, to raise awareness about the 2030 Agenda for Sustainable Development. New-York, September 2015

Celebrating WFE0's 50th anniversary in 2018



The World Federation of Engineering Organisations will celebrate its 50th anniversary during 2018 –an important milestone for the history and development of the engineering profession.

The last 50 years has been a time of unprecedented global advancements in engineering – man has landed on the moon, we have seen the personal computer and the smartphone developed and great advancements in information technology and communication.



New engineering disciplines have emerged including bio-medical engineering and we are seeing significant advances in data analytics, robotics and artificial intelligence.

Since being founded in 1968, the Federation has led the international engineering profession with contributions to global policies on the standards of engineering education, innovation, sustainability, capacity building and ethical engineering practice.

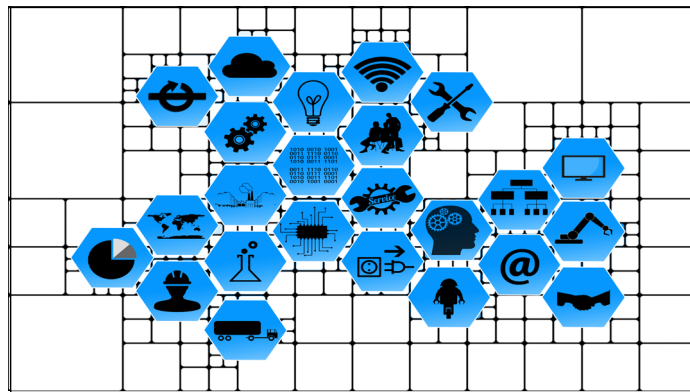
2018 will be an opportunity to celebrate the achievements of the Federation. The calendar of events will include a Symposium and social event on 7th March 2018 at UNESCO, Paris.

The Institution of Civil Engineers, UK, which hosted the formation of the Federation in London in 1968, will very appropriately host the WFEO Executive Council along with the Global Engineering Convention, GEC 2018, in October 2018 in London.

Engineering is an essential part of modern life and underpins our health and wellbeing, our social systems and cities and our economies. We will commence a process for recognising the important contributions of engineering with the United Nations for recognition of the WFEO Founding Day, 4th March of each year as World Engineering Day.

2018 will be an opportunity to communicate on the achievements of engineers and engineering across the world.

We will publish a book on our history, show case our archives through a photographic exhibition at UNESCO, Paris, produce a video which reflects our diverse members and use electronic and social media to inform young people, in particular, about engineering. Young engineers are our future and we will invite them to contribute specifically to the celebrations during the year.



We have invited all members of the Federation to celebrate the anniversary with events in their own country and region so that there is ongoing activity and communication about engineering around the world throughout 2018.

As a major science and technology organisation of the United Nations, the World Federation of Engineering Organisations has an important role in supporting the achievement of the UN Sustainable Development Goals through engineering. Each one of the Sustainable Development Goals can be progressed through the application of engineering so that no one is left behind.



During 2018, the World Federation of Engineering Organisations will develop a plan to achieve the UN Sustainable Goals through the contributions of engineering. The Plan will bring together the efforts of the Standing Technical Committees, national and international members and our international partners in a number of projects with regular reporting on progress being made.

As we celebrate in 2018, we will look forward to the next 50 years and to continuing our leadership in engineering - developing international frameworks, policies and practices to address the challenges of today and of tomorrow for a better, peaceful and more sustainable world.

Dr. Marlene Kanga
WFEO President Elect 2015-2017.

Welcome to the World Engineers Convention 2019

Engineers Australia is proud to invite the world's engineers to WEC2019 – The World Engineers Convention. This will be a key celebration of the centenary of Engineers Australia.

The World Engineers Convention is held every four years and is the “Olympics of engineering”.

Delegates have a unique opportunity to hear from experienced engineering leaders from around the world on a wide range of technical and leadership topics.

WEC 2019, co-hosted by Engineers Australia and the World Federation of Engineering Organisations, will be an opportunity for WFE0 and the global engineering community to celebrate the achievements of engineering for the benefit of the world, a key objective of WFE0.

WEC2019 will welcome delegates to the Melbourne Convention and Exhibition Centre and to the host city, Melbourne, from 18 to 24 November 2019.

We look forward to welcoming you to Melbourne in November 2019!



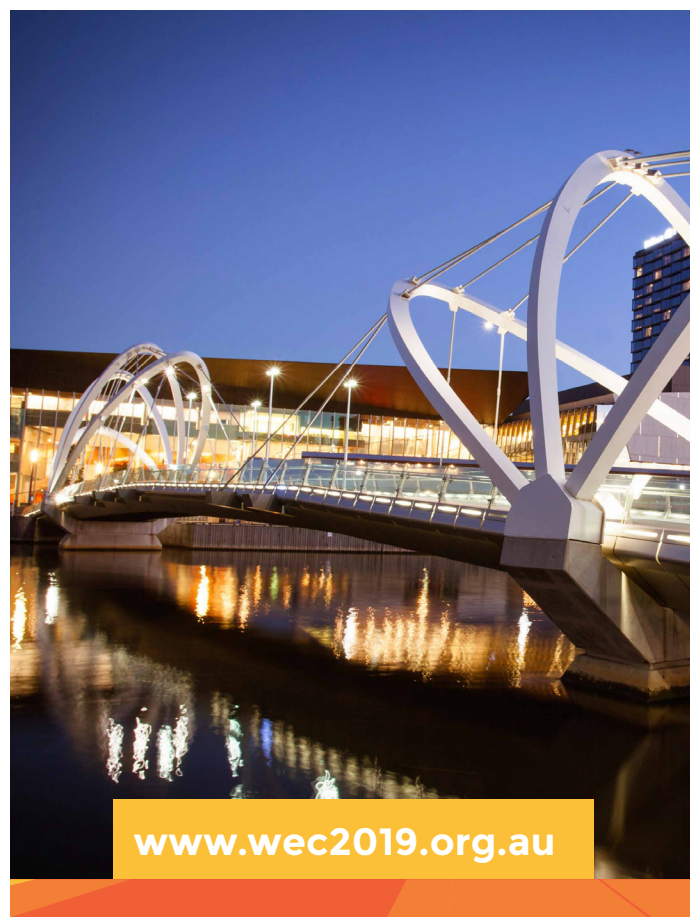
CO-HOSTS:



PARTNERS:



Under the patronage of
UNESCO



WFEO in Africa

Africa is a priority for WFEO

WFEO is convinced of the role that qualified engineers play in underpinning economic and social development, and that is particularly the case in sub-Saharan Africa.



Involvement of African members in WFEO

WFEO has 17 national members in Sub-Saharan Africa: Cameroon, Congo Democratic Republic, Ghana, Ivory Coast, Kenya, Madagascar, Malawi, Mauritius, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Tanzania, Uganda, Zambia, Zimbabwe, and one international member: the FAEO (Federation of African Engineering Organizations).



Nigeria, South Africa and Zimbabwe, are currently host of a Standing Technical Committee: respectively: Capacity Building, Anti-corruption and Women in Engineering, and, as such, their chairs are members of WFEO Executive Council.

Federation of African Engineering Organisations (FAEO), as international member, headquartered in Nigeria, also has a seat at the Executive Council.

The 2014 WFEO World Engineering Conference on Sustainable Infrastructure was held in Abuja, Nigeria, hosted by the Nigeria Society of Engineers, and welcomed by the Nigerian government.



FAEO Past President Mustapha Shehu at the CAETS Conference «Engineering A Better World», London, UK, September 2016

The Abuja Declaration

In December 2013 in Abuja, Nigeria, WFEO and FAEO signed the Abuja Declaration, stating long-term goals for engineering in Africa, and the need for professional engineering corps and good infrastructures to: "...attaining the Millennium Development Goals, (...) assist in improving the functioning of professional engineering organizations in Africa, assist countries where there are no professional engineering organizations in creating such organizations, set up a Task Team to achieve the above goals, and combine their efforts to provide funding for this purpose."



WFEO in Africa

Cooperation with UNESCO and African Engineering Week

Every year is held the African Engineering Week, co-sponsored by WFEO and UNESCO. WFEO national members for South Africa (2014), Zimbabwe (2015), Nigeria (2016) and Rwanda (2017) hosted and organized the last ones with FAEO support.

In 2017 in Kigali WFEO has endorsed the theme "Effective Waste Management in Africa" which gives a clarion call for Africa to leap frog in its waste management and infrastructure delivery programmes to solve the challenges faced as a continent. Waste management is of major interest to WFEO especially the management of the disposal of industrial and mining waste and electronic gadgets dumping.



Access to water program

As an international NGO with official partnership with UNESCO, WFEO is active in the NGO/UNESCO hydrology project, a program launched in Yamoussoukro, Ivory Coast, at the Forum on Access to Water for All in Africa in 2014.

The project has resulted in a first call for projects in 2016, with the selection of NGOs from three countries (Congo DR, Ivory Coast and Madagascar), in order to fund the enrollment of 14 of their members in the 2iE hydrology school in Ouagadougou, Burkina Faso. The program was renewed for 2017 for six countries (Burkina Faso, Cameroon, Niger, Senegal, Chad and Togo).



Opening day of the hydrology training course at the 2iE school in Ouagadougou, Burkina Faso, February 2017

The Africa Catalyst Project

Starting from 2009, WFEO conceived and structured the Africa Catalyst Project, now carried out by the UK Royal Academy of Engineering (RAEng), under the financing support of the UK DfID. The aim of Africa Catalyst is to strengthen professional engineering bodies in sub-Saharan Africa so that they can effectively promote the profession, share best practises and increase local engineering capacity, to help drive development.

In 2016, fifteen pilot projects were selected to receive grants up to £45,000 each from RAEng, among which three carried by WFEO STC on Capacity Building (South Africa), on Anti-Corruption (Zimbabwe) and on Women in engineering (Nigeria). Altogether, WFEO members or STCs were involved in nine of the projects.



WFEO Policy on Accreditation of Courses and Mobility



Introduction

WFEO believes in an engineering profession of well-qualified, up-to-date engineers, working ethically without corruption, responding to the needs and safety of their clients who may have little or no engineering knowledge.

WFEO in its pre-eminent position in the engineering profession has a key role to play facilitating the formation and assessment of engineers around the world. Representing its members to major international agencies, it is ideally placed to facilitate contacts and information exchanges between:

- the organisations that set the standards for engineering education and the assessment of professional competence;
- the employers of engineers and users of engineering products and services, and
- other international organizations and their clients, affected by the quality and number of professional engineers.

Acting as a central information source and facilitator between the Engineering Profession and International Organisations, such as the United Nations, UNESCO, UNIDO, the World Bank and OECD, WFEO would be a major contributor to the improvement of accreditation and mobility and take a significant step towards achieving its goals, which include many of the UN's Sustainable Development Goals.

Definition

Mobility is the movement around the world of professional engineers who have the quality marks of a recognized engineering degree and the post nominals confirming an assessed competence for independent practice. Professional Engineers (PEng) and Chartered Professional Engineers (CPEng) are examples of post nominals. The degrees and post nominals are recognised through international comparison with the benchmarks of the accords and mobility forums.

International benchmarking helps engineers gain employment, change country of residence, access restricted work in new jurisdictions and increase their self-worth, which helps to improve their quality of work and life.

Need for this Policy

WFEO has an interest in all aspects of engineering mobility but migration mobility is particularly important to WFEO members and WFEO's stakeholder agencies.

WFEO must continue to have a role in fostering and helping this important global activity. WFEO member organizations may aspire to international standards for their engineers. They need help to achieve this and the transition to it.

WFEO can facilitate the recognition of graduate attributes and competencies for professional engineers by the United Nations, Governments and other international agencies involved in the provision of engineering goods and services.

Policy

WFEO believes in generic attributes for graduate and competent engineers practicing ethically, without corruption and maintaining up-to-date engineering knowledge. WFEO recognises the role of the world's accreditation and mobility organizations and pledges to support their activities to maintain international qualifications and professional standards and registers for engineering and computer engineering professionals.

WFEO will encourage the recognition of graduate attributes and professional competencies for engineers by the United Nations, governments and other international agencies involved in the provision of engineering goods and services.

WFEO will not support different standards of quality that might end up with a two-tier system of accredited Engineers: those with A standard and those with B standard.

WFEO will provide a source of information for all stakeholders in the competent ethical practice of engineering and anti-corruption and facilitate exchanges between people and organizations involved in engineering activity.



WFEO Awards

WFEO awards every two years: the Medal of Engineering Excellence, the Medal of Excellence in Engineering Education and the Hassib J. Sabbagh Engineering Construction Excellence Award for Energy for Sustainable development.

The WFEO 2015 Awards were presented in Kyoto, Japan at the WFEO Gala dinner on 3 December 2015 during the General Assembly meetings.

WFEO Medal of Engineering Excellence



Lu Youmei

Prof. Lu Youmei is the winner of the 2015 WFEO Award of Engineering Excellence.

Professor Lu Youmei is a renowned Chinese hydropower engineering expert and has devoted his whole career into China's water dams and hydropower development.

He has taken part and led the construction of many mega-size hydropower projects with a total installed capacity of 25,940 MW, which include the world's largest water conservancy and hydropower Three Gorges Project.

Mr. Lu has been Vice Minister of the Ministry of Energy of China, President of China Three Gorges Project Company (CTGPC), Chairman of Chinese National Committee on Large Dams (Chincold). He has rich experience in energy development and project management, having huge influence in and out of the industry.

WFEO Medal of Excellence in Engineering Education



Chan Wirasinghe

Prof. Chan Wirasinghe is the winner of the 2015 WFEO Award of Excellence in Engineering Education.

Chan Wirasinghe is an engineering educator who obtained his B.Sc. in Civil Engineering from the University of Ceylon in 1968. He won a US Fulbright Scholarship to Berkeley and completed his Ph.D. in 1976. He moved to the University of Calgary in Canada in 1976 where he is currently a Professor of Civil Engineering. He is also the Academic Director of the Center for Transportation of the Van Horne Institute.

Dr. Wirasinghe became the Dean of the Schulich School of Engineering in 1994, held the post until July 2006, and advanced the School to be one of the best in Canada. In addition to traditional disciplines, the School offers B.Sc. programs in Software, Biomedical, Oil and Gas, Geomatics and Energy Engineering. It is a leader in women in engineering activities.

Dr. Wirasinghe's research interests are in transportation and mitigation of natural disasters. He has issued over 250 publications and supervised over forty research students.

The Hassib J. Sabbagh Award for Engineering Construction Excellence



Wu Shiyong

The Jinping Project Team is the winner of the 2015 Hassib J. Sabbagh Award for Engineering Construction Excellence.

Dr. WU Shiyong, Vice General Manager/Professoriate Senior Engineer Yalong River Hydropower Development Company, LTD is representing the Jinping Project Team.

After endeavors for over a decade, the Jinping Project Team led by Dr. Chen Yunhua overcame numerous world-level difficulties in construction of the super-tall arch dam and deep-buried tunnels and caverns, and successfully built the two world-class huge hydropower projects.

Dr. Wu Shiyong, Vice General Manager of Yalong River Hydropower Development Company, Ltd. represented the Jinping Project Team and received the award.

WFEO Members

WFEO has some 90 members from all regions of the world

National and Affiliated Members

Algeria	Union Nationale des Scientifiques et des 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
Colombia	Sociedad Colombiana de Ingenieros
Congo Democratic Rep.	L'Association Congolaise des Ingénieurs Civils
Costa Rica	Colegio Federado de Ingenieros y de Arquitectos de Costa Rica
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
Dominican Republic	Colegio Dominicano de Ingenieros; Arquitectos y Agrimensores
Ecuador	Sociedad de Ingenieros del Ecuador
Egypt	Egyptian Engineers Syndicate
Fiji	Fiji Institution of Engineers
France	Ingénieurs et Scientifiques de France
Germany	German Association of Technical and Scientific Organisations
Ghana	Ghana Institution of Engineers
Greece	Technical Chamber of Greece
Honduras	Colegio de Ingenieros Civiles de Honduras
Hong Kong, China	Hong Kong Institution of Engineers
Hungary	Federation of Technical and Scientific Societies
India	Institution of Engineers, India
Iraq	Iraqi Engineers' Union
Italy	Consiglio Nazionale Degli Ingegneri
Ivory Coast	Fédération Nationale des Organisations d'Ing., Architectes Géomètres et Urbanistes de Côte d'Ivoire
Japan	Science Council of Japan
Jordan	Jordan Engineers' Association
Kenya	Institution of Engineers of Kenya
Korea	Korean Federation of Engineering Organisations
Kuwait	Kuwait Society of Engineers
Lebanon	Ordre des Ingénieurs et Architectes de Beyrouth
Libya	Libyan Syndicate of Engineers
Macedonia (FYROM)	Chamber of Certified Architects and Certified Engineers of Republic of Macedonia
Madagascar	Ordre des Ingénieurs de Madagascar
Malawi	Malawi Institution of Engineers
Malaysia	The Institution of Engineers, Malaysia
Malta	Chamber of Engineers
Mauritius	Institution of Engineers, Mauritius
Mexico	Union Mexicana de Asociaciones de Ingenieros
Moldavia	Engineering Association of Moldava
Mongolia	Mongolian Federation of Engineering Organizations
Montenegro	Engineers Chamber of Montenegro
Morocco	Union Nationale des Ingénieurs Marocains
Nepal	Nepal Engineers' Association
New Zealand	Institution of Professional Engineers
Nigeria	Nigerian Society of Engineers
Pakistan	Institution of Engineers, Pakistan
Palestine	General Union of Palestinian Engineers
Peru	Colegio de Ingenieros del Perú
Philippines	Philippine Technological Council



Poland	Polish Federation of Engineering Associations
Portugal	Ordem dos Engenheiros
Puerto Rico	Colegio de Ingenieros y Agrimensores de Puerto Rico
Qatar	Qatar Society of Engineers
Romania	General Association of Engineers in Romania
Rwanda	Institution of Engineers Rwanda
Saudi Arabia	Saudi Council of Engineers
Senegal	Union National des Ingénieurs du Sénégal
Serbia	Serbian Chamber of Engineers
Sierra Leone	Sierra Leone Institution of Engineers
Singapore	Institution of Engineers, Singapore
Slovakia	Association of Slovak Scientific & Technological Societies
Slovenia	Slovenian Chamber of Engineers
South Africa	Engineering Council of South Africa
Spain	Instituto de la Ingenieria de Espana
Sri Lanka	Institution of Engineers, Sri Lanka
Sudan	Federation of Sudanese Engineers
Switzerland	Swiss National Committee for FEANI-WFEO
Syria	Order of Syrian Engineers and Architects
Taiwan, China	Chinese Institute of Engineers
Tanzania	Institution of Engineers, Tanzania
Tunisia	Ordre des Ingénieurs Tunisiens
Turkey	Union of Chambers of Turkish Engineers and Architects
Uganda	Uganda Institution of Professional Engineers
Ukraine	Ukrainian Union Scientific and Engineering Associations
United Arab Emirates	Society of Engineers, UAE
United Kingdom	Institution of Civil Engineers
United States, America	American Association of Engineering Societies
Uruguay	Asociacion de Ingenieros del Uruguay
Yemen	Syndicate of Yemeni Engineers
Zambia	Engineering Institution of Zambia
Zimbabwe	Engineering Council of Zimbabwe

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 Engineering Association of Mediterranean Countries (EAMC)
 Federation of Arab Engineers (FAE)
 Federation of African Engineering Organisations (FAEO)
 Federation of Engineering Institutions of South and Central Asia (FEISCA)
 European Federation of National Engineering Associations (FEANI)
 Federation of Engineering Institutions of Asia and the Pacific (FEIAP)
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 Pakistan Engineering Council (PEC)

In Memoriam

WFEO presents its deepest regrets on the passing of three of its most dedicated contributors and would like to commemorate their work and lifelong dedication to the Engineering world.



Bill Salmon

Bill Salmon passed away on July 27, 2017, in Williamsburg, Virginia, at age 81. He was born in New York City on September 3, 1935. He lived most of his early years in Hingham, Massachusetts where he attended Hingham High School and then Thayer Academy. Bill went to MIT for college where he earned a Bachelor of Science in Mechanical Engineering in 1957 and a Master of Science in Mechanical Engineering in 1958.

Bill had extensive experience in engineering and science policy through his career with the U.S. National Academy of Engineering and the Department of State.

His professional activities included:

- having negotiated and managed bilateral science cooperation agreements between the US and over 20 other countries;
- created the Office of Environmental Affairs;
- US negotiator on several international treaties, including the International Ocean Dumping Convention, US-France-UK Stratosphere Research Agreement, Law of the Sea Convention;
- extensive involvement on behalf of the US in the science and engineering programs of UNESCO, IAEA, OECD;
- contributed significantly to the organization of the 1972 UN Conference on the Environment (Stockholm Conference) and the initial formation of UNEP;
- created Office of International Communications Policy, and
- opened communications satellites to US private sector.

He was an active supporter of our USA member the American Association of Engineering Societies (AAES) since 1986 and was an active proponent of global engineering associations, including the International Council of Academies of Engineering and Technological Sciences (CAETS), the Pan American Association of Engineering Societies (UPADI) and WFEO.

He was the representative of the USA National Member in the WFEO Executive Council during the period 2007-2011, and chair of several Task Groups. In 2011, he earned the WFEO Medal of Engineering Excellence.



David Thom

David Thom, CBE, Dist. FIPENZ, FICE, was one of the greatest New Zealand engineers. David aged 92, died in Auckland on 19 January 2017.

Having served as a navigator during WW2, David returned to New Zealand in 1946 to undertake his engineering training for the Institution of Civil Engineers (UK) examinations at Seddon Memorial Technical College (now Auckland University of Technology).

As well as being an engineer David was a superb leader and original thinker. During the 1990s decade he became very widely regarded and respected within the international engineering community as a leading advocate for engineering and sustainable development and care for the environment and was invited to be a guest speaker at many national and international engineering conferences.

He was Chairman of WFEO Committee on Engineering and the Environment from 1991 – 1999, Vice President of WFEO from 1995 – 1999 and Chairman of the Federation of Engineering Institutions of South East Asia and the Pacific standing committee on Engineering and the Environment 1987 – 1991.

David was recognised both nationally and internationally by many awards.



Don Roberts

Don V. Roberts, P.E., Dist. M., ASCE and past President of the GBA (ASFE) and Vice-President of WFEO, passed away peacefully at his home in Denver, Colorado on January 31, 2016.

Don Roberts has successfully chaired the WFEO Standing Technical Committee on Technology from 2001 to 2003 and he received several awards for his contributions to engineering including WFEO's Gold Medal in 2003 for "outstanding service to humanity", the AAES Joan Hodges Queneau Palladium Medal in 2004 for "outstanding achievement in environmental conservation as one of the engineering profession's most eloquent spokespersons for sustainable development" and the ASCE Presidents' Award in 2005 "for his advocacy for the engineering community's engagement in the dialog on sustainability issues internationally, his leadership in WFEO and his tireless efforts to serve civil society by incorporating the tenants of sustainable development into engineering practice." He was elected a "Distinguished Member" of ASCE in 2009.

Roberts will be fondly remembered for his creativity, wisdom, vision, and professional and personal kindness to many engineers. Charleen, his wife of 64 years, has asked that all donations in his memory go to the ASCE Sustainability Fund.



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Editor in chief

Jacques de Méreuil

Drafting team

Jacques de Méreuil, Théo Belaud, Ivan Juiz and the WFEO contributors

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الإتحاد العالمي للمنظمات الهندسية
世界工程组织联合会



WFEO / FMOI

Maison de l'Unesco - 1 rue Miollis, 75015 Paris, France
Tel : +33 (0) 1 45 68 48 46 - Fax : +33 (0) 1 45 68 48 65
secretariat@wfeo.org
www.wfeo.org