



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

# Biennial Report 2019 - 2021









# WFEO at a glance

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

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

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

## Major Initiatives

### WFEO at the United Nations

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

### WFEO and Capacity Building for Engineering

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

### WFEO and the UNFCCC and COP meetings

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

### WFEO and Diversity in Engineering

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

### WFEO and Africa and Small Island Developing States (SIDS)

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

### WFEO World Engineers Convention

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

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# Report of the President



**Gong Ke**  
WFE0 President

The last biennium was the most extraordinary time for WFE0. In 2020, the COVID-19 pandemic upended all societies, with the immediate and disruptive effects being acutely felt across all aspects of people's daily life and works. Engineers have actively engaged into the battle against pandemic with courage, wisdom and responsibility. During the pandemic, WFE0 and all its members have never stopped their work and even enhanced their activities to accelerate the engineering contribution to delivering on the **Sustainable Development Goals (SDGs)**. I'd like to sincerely express my heartfelt thanks to all our member organizations, to Executive Council and our Standing Technical and Policy Implementation Committees, to Executive Board and its working committees and groups, to the Secretariat, who have stepped up their efforts to meet the challenges of the crisis and fulfilled their role effectively and resiliently during these difficult times. Hereby I also want to express again my deepest condolences to relatives of our colleagues who lost their lives in this pandemic.

However, it has also proved to be a rewarding and fruitful period for all WFE0 members, associates, supporters and partners. In the early stage of the pandemic, WFE0 made a declaration to call on collaboration and partnership between engineers across the globe to devote their expertise to help fight the pandemic. Almost two years after its outbreak, we are proud to see that engineering and engineers are making a significant difference in providing well-timed responses and innovative solutions to pressing issues of infrastructure, medicine, and monitoring, and to the work of building back better for the future.

Despite the hard conditions and difficulties caused by the COVID-19 pandemic, this biennial report shows that WFE0 have well maintained their operations and pushed forward progress in advancing engineering development and cooperation to achieve the SDGs. During this special two years of my term of fulfilling the duty as president of WFE0, I did not have the opportunity to meet with my colleagues, but our souls have closely been linked in combating the pandemic and in accelerating the engineering actions of delivery of the UN SDGs of 2030.

In these difficult conditions, WFE0 has come a long way in this endeavor by extending its influence on a global scale and engaging closely and widely with members and associates, committees and working groups, UNESCO and other UN agencies, and other international and regional counterparts in science, technology and engineering. WFE0 has proactively played its role, representing the global engineering society. We have worked with our members and partners to bring the engineering perspective to many important UN activities, such as the annual **Science, Technology and Innovation (STI) Forum**, the annual **High Level Political Forum (HLPF)**, the **COP26**, the **second UN Global Sustainable Transport Conference**.

WFE0 has successfully organized the global online celebrations of the **World Engineering Day for Sustainable Development (WED) in 2020 and 2021**, and we are now working hard for WED2022. On March 4th, 2020, the first ever WED was celebrated online, with 88 events registered in WED website were held in 40 countries; In 2021, WED even achieved growth with more than 100 events across the world being registered on the WED website and tens of millions people were engaged through conventional outlets and social media. The **UN Secretary-General António Guterres**, UNESCO and other UN agencies voiced their support for the Day, and the **President of France** has given his patronage to the Day. Companies and governmental organizations, engineering institutions, universities, and particularly, young people have actively engaged themselves in the events.

WFE0 has strengthened the cooperation with UNESCO and other partners, which had been significantly marked by the success of the **2nd UNESCO Engineering Report, Engineering for Sustainable Development**, a systemic report on engineering development underlining the crucial role of engineering in achieving sustainable development and introducing approaches to build the engineering capacity for the SDGs. This report was launched on March 4th, the **World Engineering Day 2021**, **UNESCO Director General Audrey Azoulay** pointed out that "*(the report) is an important milestone in the standard-setting work of UNESCO*". It reiterates the importance of engineering as it seeks to respond to the new challenges and expectations raised by the **UN 2030 Agenda for Sustainable Development**. This report also proposes the engineering community's major tasks of enhancing engineering innovation, inclusion, collaboration, and capacity building.



Addressing at the opening ceremony of the 3rd World Science and Technology Development Forum 2021

WFEO has successfully made progress in the collaboration with IEA, the umbrella organization of the international engineering education accords and agreements, and other partners such as **International Federation of Engineering Education Societies (IFEES)**, **International Federation of Consulting Engineers (FIDIC)**, **International Network of Women Engineers and Scientists (INWES)** and **UNESCO International Centre for Engineering Education (ICEE)**, to review and update the framework of **Graduate Attributes and Professional Competencies (GAPC)**, to align this benchmark for the recognized quality of engineering education with the UN Sustainable Development Goals and to meet the challenges for the 4th Industrial Revolution. The publication of the revised Framework by the **International Engineering Alliance (IEA)** with the acknowledgment of support from UNESCO and WFEO is a significant outcome for WFEO, its members and partners. It is the first time that all WFEO members have been involved in updating the benchmark standard of engineering education. WFEO is going to continue this collaboration by building an open training portal for its members, to help them improve the engineering education in their country and obtain the signatory status in related engineering education accords. This is also a real step forward to respond to the **UNESCO Recommendation on Open Science**.

WFEO has strengthened its works on climate actions. In **COP25**, WFEO had made a declaration and then called on our member organizations to sign it and take actions on climate emergency. In **COP 26**, we organized, co-organized and participated in a number of activities, manifesting the support of engineering communities to the Global Climate Actions. WFEO has also partnered with the **Office of Climate Education (OCE)**, a UNESCO category 2 centre, and jointly carried out the training workshop in Mauritius.

We have never slowed down our pace in catching up with the 4th Industrial Revolution. With **UNDESA** and **UNESCO** and the **Office of UN SG's Envoy of Technology**, we have jointly released the **Resource Guide on Artificial Intelligence Strategies**, in which the suggested "Big Data and AI Principles in Engineering" by WFEO is included. We have continuously made side events in the **Internet Governance Forum (IGF)** in these two years. And, together with the **World Geospatial Industry Council (WGIC)** and the **United Nations Initiative on Global Geospatial Information Management (UN-GGIM)**, we have released the **White Paper on Resilient Infrastructure – Geospatial & BIM (Building Information Modeling)**.



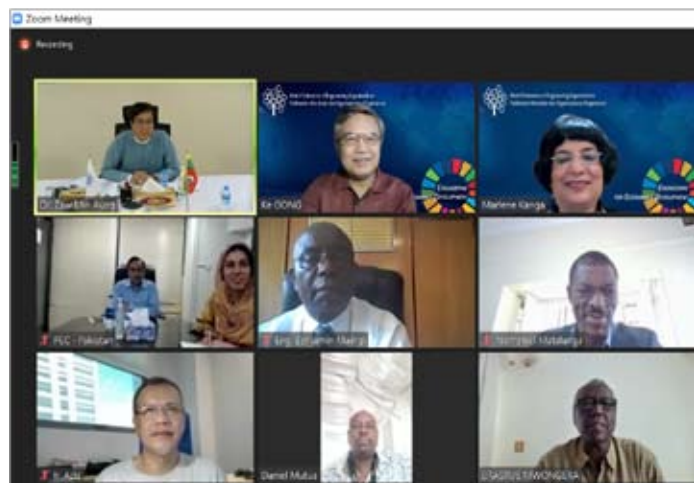
Speaking at the 23rd China Beijing International High-Tech Expo and WFEO Exhibition September 2020

In all WFEO activities, we value equal opportunities for all and lay emphasis on developing countries especially in Africa. We make every effort to support our African members and **Federation of African Engineering Organizations (FAEO)** activities in particular. We affirm the role of young innovators in engineering and provide influential platforms for them to give play to their genius. We strive to empower women in engineering so as to retain and engage more young women to consider engineering as their profession and ensure that they are equally represented. We reinforce and enlarge the collaboration with our partners to increase the voice of engineering in the global agenda.

In conclusion, the past two years have witnessed productive outcomes of WFEO in promoting global engineering cooperation in accelerating the delivery of the SDGs in terms of engineering education, capacity building, empowering women and youth in engineering, and helping the public gain a deeper understanding of the significant role that engineering plays in realizing sustainable development. The building of WFEO has been further consolidated through relentless efforts by WFEO committees, members and related parties. The operations of WFEO are transparent and strictly follow the Constitution and the Rules of Procedures, but more efforts have to be made continuously to increase the efficiency of the operations of the Federation, in order to better implement its mission and serve to its members.

Looking ahead, I am convinced that WFEO will continue to progress the cause of pursuing sustainable development by offering collective strength and wisdom from the engineering community, and I look forward to our future endeavors with WFEO members and partners in this regard.

GONG Ke,  
President of World Federation of Engineering Organizations (WFEO)



Attending WFEO-CEIE and Engineers Board of Kenya (EBK) Meeting October 2021

The following is the list of Prof. Gong Ke's international engagements:

- **Institution of Engineers (India), Hyderabad, India**, 34th Indian Engineering Congress, IEI 100 Anniversary, 27-29 December 2019.
- **UNESCO and World Engineering Day for Sustainable Development (WED2020), Paris, France**, December 2019 - March 2020.
- **WFEO COVID-19 Information Portal, WFEO website**, March 2020 ~.
- **UNESCO, International Center for Creativity and Sustainable Development (ICCSA)**, Creativity 2030 Forum, 8 May 2020.
- **Peruvian Engineers Association (CIP), Lima, Peru**, CIP's Anniversary-Peruvian Engineering Week, webinar on "Global Engineering in the Context of COVID-19", 8 June 2020.
- **China Association for Science and Technology (CAST), Tianjin, China**, World Intelligence Congress, 23-24 June 2020.
- **FEIAP FAEO MOU Signing Ceremony**, 2 July 2020.
- **2021 UN High-Level Political Forum (HLPF) - WFEO side event** "How the Lever of Science and Technology Can Be Used in Peri-urban and Urban Environments to Advance Sustainable Development: the Case of Implementing Geospatial Engineering", 9 July 2020.
- **International Science Council (ISC), HLPF side event** "Designing and implementing integrated, context-sensitive and attainable pathways towards achieving transformation", 10 July 2020.
- **CAST, Beijing, China**, Global Digital Economy Summit for Small and Medium Enterprises 2020 (DES2020), 16-17 July 2020.
- **International Engineering Alliance (IEA) and UNESCO, webinar** on the IEA Graduate Attributes and Professional Competencies Framework (GAPC), 18 July 2020.
- **WFEO Committee on Young Engineers/Future Leaders (WFEO-YEFL) webinar** "Engineering the Future: Resilience and Sustainability For Young Engineers", 22 July 2020.
- **WFEO Committee for Women in Engineering (WFEO-WIE) and INWES webinar** on Diversity and Inclusion, 31 July 2020.
- **CAST, Beijing, China, ZHONG-GUAN-CUN Forum**, 17-20 September 2020
- **CAST, Beijing, China**, 23rd China Beijing International High-Tech Expo and WFEO Exhibition, 17-20 September 2020.
- **WFEO Committee on Engineering for Innovative Technologies (WFEO-CEIT) and WFEO-YEFL webinar** "A Sustainable Future: Young Engineers and the 4th Industrial Revolution (4IR)", 18 September 2020.
- **4th Global Sustainable Technology and Innovation Community (G-STIC) conference**, 26-28 October 2020.
- **International Consortium on Landslides (ICL), Kyoto, Japan**, greeting to the launch session of the Kyoto Landslide Commitment 2020 (KLC2020), 2-6 November 2020.
- **FEIAP-WFEO-FAEO jointly host Conference** on Engineering Education, Xi'an, China, 7 November 2020.
- **CAST, Beijing, China**, 2nd World Science and Technology Development Forum, 8-9 November 2020.
- **CAST, Beijing, China**, World Conference on Science Literacy 2020, 8 November 2020.
- **WEF & GEDC 2020 Conference** "Disruptive Engineering Education amidst Global Challenges", Cape Town, South Africa, 16-19 November 2020.
- **UNESCO Engineering Report: Engineering for Sustainable Development: Delivering on the Sustainable Development Goals**, Report, cooperation with UNESCO, Chinese Academy of Engineering, UNESCO International Centre for Engineering Education (ICEE) to compose, edit and finalize the report, November 2020 - March 2021.
- **World Geospatial Industry Council (WGIC), GEOBIM 2020 Conference** "Construction 4.0: Harnessing GEOBIM Readiness with 4IR Advancements", 3-4 December 2020.
- **UNESCO, International AI and Education Conference**, 7-8 December 2020.
- **WGIC, GEO.AI - Redefining Geospatial Conference**, 7-9 December 2020.
- **CAST and Russian Union of Scientific and Engineering Associations (RUSEA)**, China-Russia Digital Economy Summit 2020, 22 December 2020.
- **Myanmar Engineering Council**, International Conference on Engineering Education Accreditation, 14-16 January 2021.
- **UNESCO and World Engineering Day for Sustainable Development 2021 (WED2021), Paris, France**, themed on "Engineering for A Healthy Planet- Celebrating the UNESCO Engineering Report", January - March 2021.
- **Consultation webinar with members of FIDIC on UNESCO IEA WFEO Draft Review IEA GAPC**, 4 February 2021.
- **American Society of Civil Engineers (ASCE)**, Roadmap to the 2030 UN Sustainable Development Goals - Advancing Sustainable and Climate Resilient Infrastructure, 4 March 2021.
- **WFEO-CEIT webinar** on Engineering in Poverty Alleviation, 6 March 2021
- **Science, Technology & Innovation (STI) Forum 2021**, WFEO side event, "Engineering - Bridging the Gap for a Sustainable and Resilient Recovery", 4 May 2021.
- **ASCE, Institute of Civil Engineers (ICE) and Canadian Society for Civil Engineering (CSCE)**, Civil Engineering Triennial Summit 2021, 25-26 May 2021.
- **IEA Annual Meetings and Announcement of approval by IEA of the revised GAPC**, 20-24 June 2021.
- **HLPF-WFEO Side event** "Deploying Global Youth Capacity in UN Policy and Engineering for SDG 13", 9 July 2021.
- **CAST, 2nd China-Brazil Innovation Week / Sustainability Cooperation Forum 2021**, 16-18 August 2021.
- **WFEO-CEIT, Beijing, China**, China International Fair for Trade in Services, 2-7 September 2021.
- **Chinese Academy of Science, UN Environment Programme (UNEP) and UN Convention to Combat Desertification, Beijing, China**, International Forum on Big Data for Sustainable Development Goals, 6-8 September 2021.
- **FAEO 1st ASRIC Conference** on Engineering Sciences, Cairo, Egypt, 6-9 September 2021.
- **WFEO-WIE webinar** on Intersectionality of Gender, Climate Change and Engineering, 17 September 2021.
- **Ghana Institution of Engineering, Accra, Ghana**, 7th African Engineering Week, 4-8 October 2021.
- **WFEO Committee on Energy symposium** on Energy transition and Covid-19 crisis: the role of engineers, 6-7 October 2021.
- **2nd UN Global Sustainable Transport Conference and Forum** on STI for Sustainable Transport, Beijing, China, 14-16 October 2021.
- **5th Global Sustainable Technology and Innovation Community (G-STIC) conference**, 24-26 October 2021.
- **COP 26 UN Climate Change Conference, Glasgow, UK**, actively took part in and organized, participated in a number of activities, showing the support of our engineering community to Global Climate Actions, 31 October - 12 November 2021.
- **CAST, Beijing, China**, 3rd World Science and Technology Development Forum, 6-7 November 2021.
- **Institution of Engineers Kenya (IEK), Mombasa, Kenya**, 28th IEK Annual International Conference, 9-12 November 2021.
- **United Nations Industrial Development Organization (UNIDO), Vienna, Austria**, 19th session of the UNIDO General Conference, 29 November - 3 December 2021.
- **CAST, Beijing, China**, World Conference on Science Literacy 2021, 30 November 2021.
- **UN Sustainable Development Solutions Network**, special meeting of university presidents in the Asia-Pacific region: University Sector Support to the UN's Decade of Action, 1 December 2021.
- **Tsinghua University, Beijing, China**, 2021 International AI Cooperation and Governance Forum, 4-5 December 2021.
- **UN Internet Governance Forum (IGF2021), Katowice, Poland**, 6-10 December 2021.
- **UNESCO International Forum on Artificial Intelligence and Education 2021, Paris, France**, 7-8 December 2021.
- **UNESCO ICEE, Beijing, China**, 2021 Engineering for Sustainable Development Symposium, 9 December 2021.
- **China Engineering Education Accreditation Association (CEEAA) International Conference** on Engineering Education, 12 December 2021.
- **Institution of Engineers (India)**, New Delhi, India, 36th Indian Engineering Congress and WFEO-CIC Session on Smart Technologies for Smart Cities, 26-28 December 2021.
- **CAST and RUSEA**, China-Russia Digital Economy Summit 2021, 28 December 2021.



# Report of the President-Elect



**José Vieira**  
WFE0 President-Elect

“ In a changing and challenging world it is my commitment to promote WFE0 visibility and institutional relevance in achieving the United Nations sustainable development goals through effective international cooperation with influential stakeholders for the engineering profession to build social progress and serve Humanity and protect the Environment.”

In November 2019 I had the privilege and honour of being elected President of the WFE0 with the commitment to maintain and, if possible, scale up efforts to give WFE0 visibility and institutional relevance. During the past two years, I have worked closely with the President Gong Ke, the past-President Marlene Kanga, and the Executive Board in two prioritized strategic vectors: setting programmatic work to promote international cooperation in engineering capacity building standards; and highlight the pivotal role that the engineering profession has to play helping society facing new threats and challenges of sustainable development. These priorities are justified because we are fully convinced that the work of engineers is decisive for a green economy, for the energy transition and for the digital transformation in scenarios of resource depletion, environmental degradation and climate change.

In 2020-2021, individuals, families, organizations and institutions around the world were tested by the COVID-19 pandemic which had a strong impact on their daily lives and the way they work. For WFE0 it was a very intense period working in ways never before experienced. Travel and face-to-face meetings were cancelled and much of the planned activities migrated to online platforms supported by the Secretariat. Even our General Assembly in San José, Costa Rica, had to be postponed to March 2022.

I had intense activity in webinars and online meetings to deal with WFE0 corporate matters. In addition to online meetings of the Executive Council and Board Committees, I have taken initiatives as Chair of the Governance Committee in updating essential documents of the Federation's daily life, such as the Constitution and the Rules of Procedure.

Following the **International Forum Capacity Building** in Beijing 2018 I have participated with past-President Marlene Kanga and President Gong Ke in a series of activities with the objective of advancing the construction of the WEO Academy project, which, with the partnership of the **International Engineering Alliance (IEA)** and the **International Federation of Engineering Education Societies (IFEES)**, will materialise an aspiration of WFE0 in providing its members with an engineering education capacity building platform.



José Vieira at the International Forum on Engineering Capacity, Beijing, China, November 2018

Regarding the WFE0 strategic cooperation with **UNESCO** and **United Nations** I have actively participated in some events particularly related to the **UN Sustainable Development Goals (SDGs)**, namely in the High Level Political Forum on Sustainable Development, **WFE0 UN Webinar "Deploying Global Youth Capacity in UN Policy and Engineering for SDGs"**, July 2021, and the **UNESCO and Government of Angola High-Level Political National Meeting on Engineering Training**, July 2021.

I have also been invited to deliver keynote speeches and opening addresses in several congresses: **El Desafío de la Agenda UN 2030 para el Desarrollo Sostenible (the challenge of the UN 2030 Agenda for sustainable development) UPADI**, March 2020; **Brazil Water Week**, October 2020; the **Institution of Engineers of Kenya 27th International Annual Conference**, November 2020; the



**Intersectionality of Gender, Climate Change and Engineering Webinar** by the **WFEO Committee on Women in Engineering**, October 2021; the **International Congress Angolan Association of Engineers**, November 2021; the **Fifth World Landslide Forum - Implementing and Monitoring the Sendai Landslide Partnerships 2015-2025**, November 2021.

Another important event in which I actively participated was the **WFEO GREE Women in Engineering 2020 Award** through which WFEO rewards outstanding women engineers who have made significant contributions to engineering and in which I acted as a member of the international jury and in the award ceremony (April 2021).



José Vieira at the Awarding Ceremony of the WFEO GREE Women in Engineering Award 2020 (online), April 2021

Prof. Dr. José Vieira is a civil engineer with extensive experience in engineering education, research and management. He is Full Professor at University of Minho, Portugal, where he served as Pro Rector (1990-1998) and Vice Rector (1998-2002). He has coordinated a large number of graduate and postgraduate study programmes in civil engineering, and develops his research activities in the fields of water resources planning and management, and drinking water and public health.

As the National Vice President of the Portuguese Association of Engineers (2010-2016), he was responsible for effective international cooperation in mutual recognition of engineering education and capacity building standards in the Portuguese speaking countries.

He was President of FEANI, the European Federation of National Engineering Associations (2014-2020). He has been involved in WFEO activities since 2015 as a member of the Executive Council and chair of several Board Committees: Strategic Planning, Governance, and Committees' Support and Review.

WFEO is committed to maintaining close cooperative ties with UNESCO, its strategic institutional partner. In this context, I participated in the institutional effort of the WFEO in the preparation of the **second UNESCO Engineering Report "Engineering for Sustainable Development"**, in which I had the honour of authoring two chapters. This Report is a milestone in communication about the relevance of engineering in achieving the SDGs.

During this period of time I worked closely with the Executive Board in planning the events that will indelibly mark the celebrations of the **World Engineering Day for Sustainable Development** on March 4, 2022. In fact, it is expected that these two major events of the program, Hackaton and 24HRS LIVE, have a huge impact contributing to the greater visibility and relevance of WFEO on a global scale.

At WFEO we are very concerned and committed to understand the societal needs and the role of the engineer as a professional with the adequate technical skills and ethical courage to solve the great problems facing the planet. I believe that future technical solutions alone are not enough to meet business and societal needs, therefore engineers must take leadership roles not only on technical projects but also in societies' choices at large. That is why the commitment to the United Nations SDGs is of paramount importance for Engineering and Engineers.

# Report of the Executive Director



**Jacques de Méreuil**  
WFEO Executive Director



These last two years have been extraordinarily challenging for the WFEO and its Secretariat, but have also proven very rewarding and exciting. Here are some highlights and key facts."

## 1. Administration, staff and finance

In spite of difficult working conditions, and with the support and leadership of our President, our Executive Board, our Members and Associates, we have succeeded in further developing WFEO activities, strengthening its image and recognition by the many organizations we are working with, in particular UNESCO. The Secretariat's staff remained stable during this period, with Executive Assistant Théo Bélaud and Webmaster Ivan Juiz activities completed by our part time accountant Isabelle Cafaro, who has helped us enhance our financial and administrative management.

Whilst working mostly from home throughout these two years, the WFEO Secretariat has been organizing itself to be a smart, agile and resourceful team applying principles and processes in line with WFEO's values. It has been coordinating at distance, setting up a high number of virtual meetings, of the Executive Board, Executive Council and even General Assembly, as well as with our many partners and member institutions. It also provided assistance to the Standing Technical Committees (STCs), Policy Implementation Committees (PICs) and Working Groups, to develop their activities, setting up internal meetings and webinars which were key to accomplishing their missions. Board committees - Awards, Finance, Membership, Nominations - meetings, which are essentials to initiate the decision process of the Federation, were also held at distance.

The financial situation of the Federation is sound, in spite of difficulties encountered by some members in this time of pandemic; this is due in particular to a €100,000 gift from our **Chinese member CAST**, and a contract with UNESCO for the finalization of the 2nd Engineering Report. With a positive result in the latest years (€54,000 in 2019, €43,000 in 2020) the reserves reached €555,000 at the end of 2020, and will probably further increase at the end of 2021.

Accounting methods were improved for a better securisation, and a new software for invoicing was introduced at Fall 2021, with all membership invoices sent through it for 2022.

## 2. Relations with UNESCO and other partners

The Secretariat activity, beyond servicing our members and governing bodies, is turned towards international institutions, and in particular UNESCO. We went on developing relations with the **Assistant Director-General for Natural Sciences Sector Dr. Shamila Nair Bedouelle and her team**.

Main activities with this organization were the followings :

- First celebrations of the **UNESCO World Engineering Day for Sustainable Development**, coordinated by WFEO Secretariat (4 March 2020 and 2021);
- **2nd Engineering Report**, co-edited and authored by **UNESCO** and WFEO leaders, with edition and administrative support from WFEO Secretariat; the Report was presented on 4 March 2021 in an official launching ceremony co-hosted with UNESCO;
- Renewal of our NGO in official relations (with associate status) with UNESCO for 8 years, approved at the **212th UNESCO Executive Board meeting**;
- Participation, with oral intervention by the Executive Director, at the **UNESCO 41st General Conference meeting** (November 2021).



WFEO Executive Director Jacques de Méreuil delivering his speech at the 41st session of the UNESCO General Conference during the General Policy debate on 15 November 2021



### 3. Relations with members and internal projects

The Executive Council meeting held in October 2020 was an opportunity to welcome three new members: **Engineer Angolan Association (OEA)**, **Institution Engineers Indonesia (PII)**, and **American Society of Civil Engineers (ASCE)** from the USA.

Several associates also joined the Federation at that time: **Colegio de Ingenieros Civiles del Estado de Jalisco A.C. (CICEJ)** from Mexico and the **International Association of Engineering and Architecture (IAEA)** from Spain.

**Dr Jürgen Kretschmann** was the first individual to be admitted to the new membership category of "Distinguished Fellow", at the October 2020 Executive Council. He was followed by **Dr. Vilas Mujumdar**, at the November 2021 Executive Council.

### 4. Communication

The website is continuously updated to focus on WFEO international leadership and activities.

The Flash Info newsletter, published on a bimonthly basis, is sent to more and more readers from our membership, associates and friends, providing updates on activities, projects and information of interest to engineers. If you want to join this growing community, please sign up writing an email to [webmaster@wfeo.org](mailto:webmaster@wfeo.org)

We continue to develop our presence in the social media platforms (Facebook, Twitter, LinkedIn, Youtube). This activity has become more and more critical as we have continuously increasing our number of online events and webinars, as well as for preparing the yearly **World Engineering Day celebrations**.

We prepare, support, and do the post Zoom webinar work, along with their promotional banners, flyers, and video editing.

Finally, I would like to insist on the relevance of our institutional structure and organization. In spite of the small size of our Secretariat, which definitely needs to grow, we have proven how much it makes sense for WFEO Members to rely on a permanent team based in UNESCO headquarters, with regular contacts with UNESCO officers and Member States delegations, and other NGOs, even in Covid-19 time. Besides, the format or the Secretariat also turned out to be an asset, as it is much easier to quickly adapt to fastly evolving contexts and challenging new tasks with a small, but agile team with versatile skills.

# WFEO Executive Council

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## Executive Board

Gong Ke  
President

José Manuel Vieira  
President-Elect

Marlene Kanga  
Past President

Mustafa B. Shehu  
Executive Vice President

Seng Chuan Tan  
Treasurer

Jacques de Méreuil  
Executive Director

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## Standing Technical Committee Chairs

José Macharé  
Disaster Risk Management

Zaw Min Aung (Acting TBC)  
Education in Engineering

Jean Eudes Moncomble  
Energy

Martin Manuhwa  
Engineering Capacity Building

Davide Stronati  
Engineering & the Environment

Jing Peng  
Eng. for Innovative Technologies

S.S. Rathore (Acting TBC)  
Information & Communication

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## Policy Implementation Committee Chairs

Papias Kazawadi  
Anti-corruption

Yetunde Holloway  
Women in Engineering

Firas Bou Diab  
Young Engineers / Future Leaders

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## National Members

Abdul Majeed Al Gassab  
Bahrain

Oscar Sanchez  
Costa Rica

Ruomei Li  
China

Navinchandra Vasoya  
India

Ania Lopez  
Italy

Nathaniel Matalanga  
Kenya

Khaled Chehab  
Lebanon

Tomas Sancho  
Spain

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## International Members

Paul Jowitt  
Commonwealth Engineers Council  
(CEC)

Adil Al Hadithi  
Federation of Arab Engineers  
(FAE)

Carlien Bou-Chedid  
Federation of African Engineering  
Organizations (FAEO)

Dirk Bochar  
European Federation of National  
Engineering Associations (FEANI)

Huang Wei  
Federation of Engineering Institutions  
of Asia and the Pacific (FEIAP)

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

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## Non voting Members

Alain Jouanjus  
Auditor

K. N. Gunalan  
Chair of WFEO-UN Relations Committee

Martin Van Veelen  
Chair of Working Group on Infrastructure  
Report Card

Ignacio Gonzalez-Castelao  
Chair of Working Group on Water

François Lureau  
Chair of Nominations Committee



# WFEO Engineering 2030 Plan

WFEO has demonstrated the need for the WFEO Engineering 2030 Plan which has provided a focus for the work of our Committees and Working Groups on advancing one or more of the UN Sustainable Development Goals.

The review and approval of the Graduate Attributes and Professional Competencies Framework is a significant achievement of the WFEO Engineering 2030 Plan and implements a key recommendation of the second UNESCO Engineering Report, with long term positive impacts on engineers and the engineering profession. We are mentoring our members to support their development as signatories of the Agreements at the International Engineering Alliance.

The **WFEO Engineering 2030 Plan** activates the organization's strategic objective to advance the UN Sustainable Development Goals through engineering. This strategy was launched at the WFEO 50th anniversary celebrations in March 2018. It recognizes that engineers have a key role in developing and implementing solutions for sustainable development especially in a post COVID environment and in addressing the challenges of climate change.

The work of engineers is crucial in developing, constructing and maintaining resilient infrastructure including roads, railways bridges, dams, communication, waste management, water supply and sanitation, energy and digital infrastructure to facilitate communications, especially as the world's economies recover from the impacts of the COVID pandemic. This is the third progress report of the Plan and it will continue to be reported as part of the WFEO biennial reports.



Every one of the UN Sustainable Development Goals requires engineering

The success of the WFEO Engineering 2030 Plan demonstrates the impact of the leadership role of WFEO in international engineering, as the peak body for professional engineering institutions. WFEO is committed to continue to lead and coordinate projects with its members partners, institutions, government and industry, for sustainable development.

The **WFEO Engineering 2030 Plan** progresses the WFEO Strategic Objectives, in particular, to be recognized as the respected source of advice and guidance on engineering and technology related issues for human well-being and natural environment management and to be at the forefront of international efforts in engineering, in particular, as a means for implementing solutions to advance the 2030 Agenda for sustainable development.

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

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

The 2019-21 Biennial report presents the progress being made by WFEO projects under the **WFEO Engineering 2030 Plan**. The strategy has resulted in many successful outcomes in the past two years as every WFEO committee and working group has aligned with one or more of the SDGs that has provided a focus for their work. The result of the work of the Committees and Working Groups is reported throughout the Biennial Report and demonstrates the wide scope of engineering activities that can have a positive impact on the 2030 Agenda.

All WFEO activities also focus on one or more of the UN Sustainable Development Goals, for example in webinars and conferences and during Africa Engineering Week.

This focus has resulted in a greater awareness of the role of engineering in sustainable development by other international engineering organisations that have also now taken up this positioning. The narrative on the role of engineering in sustainable development has also had impact on WFEO's engagement and relationship with UNESCO and the United Nations. For example, the second UNESCO Engineering Report was named "Engineering for Sustainable Development" in acknowledgment of the role of engineering in this global endeavour.

# WFEO Engg 2030 Plan - Review of Engg Education Benchmark

**The Revised Graduate Attributes and Professional Competencies Framework and recognition by UNESCO will ensure that it will be the pre-eminent international benchmark for engineering education, ensuring that future engineers will be critical thinkers, inclusive, advance the UN Sustainable Development Goals in their work and committed to lifelong learning.**

The signatories of the International Engineering Alliance (IEA) Accords and Agreements approved the revised Graduate Attributes and Professional Competencies (GAPC) Framework at its annual meeting in June 2021.

This outcome is of great importance to engineers as it includes the need to change engineering and for engineers to be aware of the UN Sustainable Development Goals and advance these through their work. This is the most significant change to the Framework since it was first developed in the early 1990s. The implementation of this Framework will result in a transformation of the engineering profession, with graduates who are critical thinkers, thoughtful about the impact and outcomes of their work, capable of working in diverse and inclusive teams and committed to lifelong learning.

This decision is the culmination of a joint UNESCO-WFEO-IEA project that started in July 2018 with an initial presentation by Immediate Past President Dr Marlene Kanga at the IEA Annual meeting in London. The IEA Governing Group and Signatories accepted the proposal and agreed to move forward. This resulted in a further presentation in Hong Kong in July 2019 and subsequently a Declaration to collaborate on this project at the World Engineering Congress (WEC) 2019 in Melbourne in November 2019.

A working group was established, that brought together UNESCO, IEA signatories, WFEO members and WFEO partners. During the consultation phase for the proposed Framework, WFEO engaged with its members and partners representing academics (IFEES), industry (FIDIC) and women (INWES).

It's been a journey, especially since much of it was accomplished entirely virtually. The results of the consultation are on the WFEO website.



Signing of Declaration between UNESCO WFEO and International Engineering Alliance to collaborate on the review of the IEA Graduate Attributes and Professional Competencies Framework and to build capacity for more engineers with the right skills especially in Africa Asia and Latin America, World Engineering Congress, Melbourne, November 2019.



Webinars were hosted by WFEO to explain the changes in the proposed revised Graduate Attribute and Professional Competency Framework with the International Federation of Consulting Organizations (FIDIC), representing the consulting engineering industry, the International Network of Women Engineers and Scientists (INWES), representing women, the International Federation of Engineering Education Societies (IFEES), representing engineering educators and WFEO members.

Approximately 1000 delegates from 60 countries attended these events and provided feedback. Following approval, further work is expected on guidance and support for implementation. In addition, webinars were hosted by various WFEO members and IEA signatories to communicate the importance changes in the proposed Framework internationally.



International Engineering Alliance publishes approved revised Graduate Attributes and Professional Competencies Framework (GAPC), supported by UNESCO and WFEO. September 2021.



A webinar on the proposed revised Graduate Attribute and Professional Competencies Framework was held with the International Network of Women Engineers and Scientists (INWES) that has members in more than 30 nations. The webinar explained the key changes, especially in relation to ensuring that graduates developed awareness of the need for being inclusive, working collaboratively in diverse teams and communicating effectively in these teams. This was the first time that women have been involved in development of the engineering education benchmarks which will also result in more inclusive practices in engineering education pedagogies and materials.



# WFE0 Declarations

This page shows the first pages of the WFE0 Declarations published since November 2019. The full declarations are available on [www.wfeo.org](http://www.wfeo.org)



Declaration on Global Engineering Education Standards and Capacity Building for Sustainable Development, 21 November 2019



WFE0 Declaration on Climate Emergency, 2 December 2019



WFE0 position to the build-back-better call for arms, 5 June 2020



WFE0 Statement for International Women in Engineering Day, 23 June 2020



WFE0 Statement on Inclusive Engineering for all, 29 July 2020

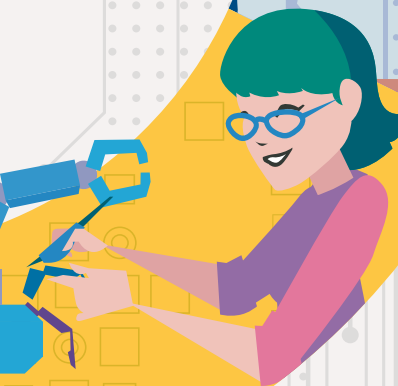


WFE0 Committee on Anti Corruption Statement on World Anti Corruption Day, 9 December 2021



United Nations  
Educational, Scientific and  
Cultural Organization

# Engineering for Sustainable Development



**ICEE**

United Nations  
Educational, Scientific and  
Cultural Organization

International Centre for  
Engineering Education  
under the auspices of UNESCO

联合国教育、  
科学及文化组织

国际工程教育中心  
联合国教科文组织支持



中央编译出版社  
Central Compilation & Translation Press

# WFEO and Second UNESCO Engineering Report

**WFEO worked closely with UNESCO to celebrate the inaugural World Engineering Day 2020 and to develop and release the second UNESCO Engineering Report on World Engineering Day 2021.**

WFEO has been recognized by UNESCO since 1968 as an important non-governmental organization with associate status to provide important advice in relation to engineering and for the implementation of UNESCO programs.

The unanimous approval by the UNESCO General Conference in November 2019, to declare 4th March as World Engineering Day for Sustainable Development presents a significant opportunity to collaborate with UNESCO to celebrate this Day each year.

WFEO has worked closely with UNESCO over the past two years on the development of the Second UNESCO Engineering Report. WFEO members and leaders have been authors and members of the advisory committee for the report. The theme of the report on the role of engineering for sustainable development aligns with the strategic objectives of WFEO and gives greater visibility to the projects being undertaken by WFEO and its committees and working groups.

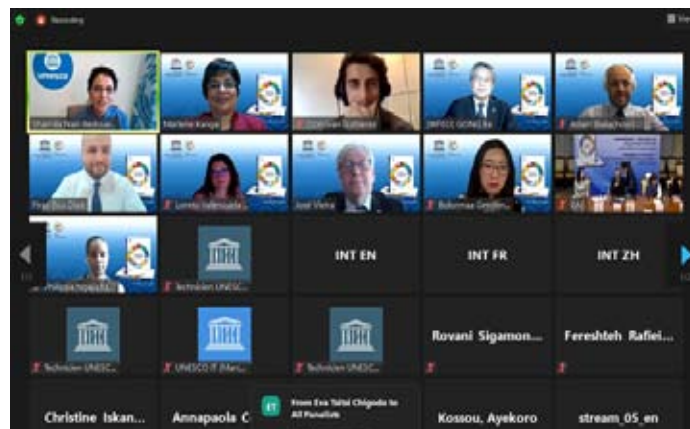
WFEO and UNESCO have also worked together on key UNESCO priorities including the 2030 Agenda, Africa, Gender equality in engineering and the Small Island Developing States (SIDS).

WFEO has had UNESCO representation at major events and has strong relationships with the Assistant Director General Natural Sciences Sector Ms. Shamila Nair-Bedouelle.

UNESCO Capacity Building Section, Natural Sciences Sector supported the work on the review of the IEA Graduate Attributes and Professional Competencies Framework and for capacity building to mentor more nations to achieve signatory status at the IEA. We have appreciated the support from Dr. Peggy Oti-Boateng, Director, Capacity Building Section, Ms. Rovani Sigamoney, Assistant Program Specialist and Mr. Zaid Angelos Haidar, Junior Consultant, for their support.

The report is available on WFEO and UNESCO websites in English, French and Chinese.

UNESCO and WFEO celebrated World Engineering Day for Sustainable Development with the launch of the second UNESCO Engineering Report, Engineering for Sustainable Development – Delivering on the Sustainable Development Goals", at a high level virtual event hosted by UNESCO on 4th March 2021. The event was live streamed to thousands of delegates around the world.



Screenshot of speakers at the UNESCO-WFEO launch of the Second UNESCO Engineering Report, 4th March 2021



WFEO President Gong Ke speaks at the UNESCO main event



Ms Shamila Nair-Bedouelle launches the second UNESCO Engineering Report



# World Engineering Day - 4th March each year

**“As a trained engineer I am passionate about the potential of engineering to help solve the most pressing challenges facing our world”** The UN Secretary General, Twitter, 4 March 2021, World Engineering Day

World Federation of Engineering Organisations (WFEO) led the proposal to declare 4th March, World Engineering Day for Sustainable Development, the founding day of the Federation.

The first World Engineering Day was celebrated on 4th March 2020. This was a virtual celebration due to restrictions imposed by COVID-19. It was an international day of celebrations across the world. The website [www.worldengineeringday.net](http://www.worldengineeringday.net) in six UN languages, media kits, ideas for events and a media presence was developed. Social media promoted events around the world.

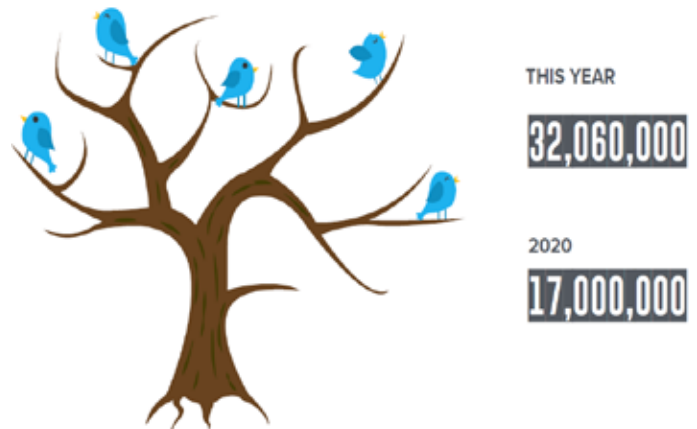
There were 88 events held in 40 countries including 4 international events, more than 9 papers published or cited by more than 100 top-tier media. The social media reached 30 million people potentially. WFEO released a statement calling engineers worldwide to fight COVID-19 on March 4th. The celebration of World Engineering Day in 2021 was also virtual and even bigger than in 2020. More than 100 events in every continent were registered on the website and more than 200 other events were held. **Social media engagement reached more than 32 million.**

The Day is an opportunity to engage with the community on the importance of engineering for sustainable development and to engage with government and industry to address the need for engineering capacity and the quality of engineers around the world.



World Engineering Day logo showing the 17 colours of the UN Sustainable Development Goals. The 17 colours of the UN Sustainable Development Goals are included in the logo and represent the commitment to the UN 2030 Agenda. The colours at the centre of the image are for the Sustainable Development Goals for Water, Energy, Sustainable Infrastructure and Innovation. These are the areas where engineers are needed most. The goal for Engineering Education is also central as the world needs more engineers with the right engineering skills for sustainable development. The goal for Climate Change is leading the pivot of the world toward zero carbon emission technologies.

## Holistic Potential Reach



Social Media Reach for World Engineering Day 2020 and 2021



Tweet from UN Secretary General Antonio Guterres, electrical engineer, World Engineering Day, 4th March 2021



UNESCO Director General Ms Audrey Azoulay, speaks on 4th March 2020, the first World Engineering Day



UNESCO celebrates the World Engineering Day - posters showing engineering and SDG on UNESCO fence



First Day Stamps issued by China Post World Engineering Day 2020



World Engineering Day 2021 – Social Media Assets



World Engineering Day 2021 - Young Engineers Poster Competition winning poster



Young Engineer Podcasts, World Engineering Day 2021



Etica Group @EticaGroupInc  
Mar 5

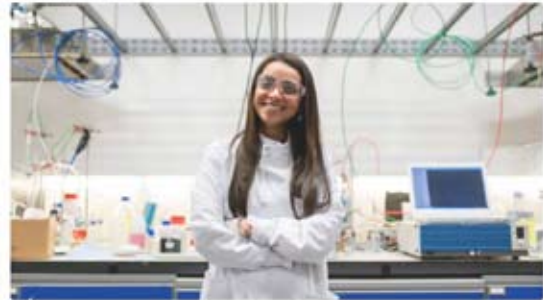
Happy #WorldEngineeringDay! 🌍 @engineering\_day



Etica Group Spontaneous Post

CD @CD\_Dublin  
Mar 4

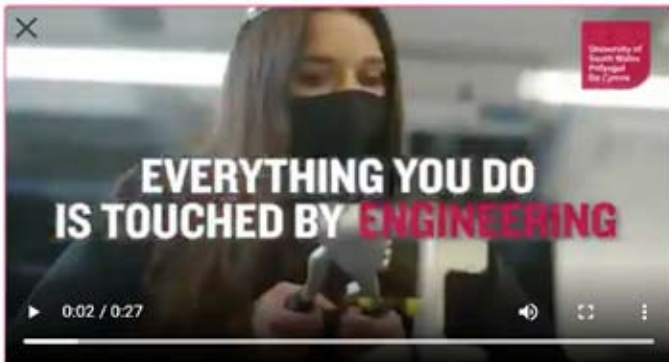
UNESCO World Engineering Day celebrates the ingenuity of sector as STEPS Engineers Week 2021 continues tinyurl.com/e7sp2bws @EngineersIreland @Education\_Ire @NormalOleyTD1 @AnupriyaIreland @ESBGroup @Intel\_IRL @TINews @Figoreilly @IrishWater @engineering\_day @EamonRyan #STEM



Engineers Ireland

University of South Wales @UniSouthWales  
Mar 4

Engineering is everywhere, from the water in the taps 🚰 to the bridges we drive across 🗣️ Today is #WorldEngineeringDay 🌍 a day to celebrate the work of engineering and to highlight the impact that engineering has on all of our lives @USWEngineering @engineering\_day



University of South Wales



Lucy Wanjiku, first Vice President of Institution of Engineers of Kenya

Bentley Systems, Inc. @BentleySystems  
3 days ago

Join Bentley SVP Bob Mankowski to learn what 167 cities said about their level of engagement in #sustainable development goals, digital advancement & more... Groundbreaking smart cities research coming March 30th bit.ly/3oTPWUd @ESVThoughtLab @WorldEngineeringDay #WED2021



Bentley Systems

Royal Academy of Engineering @RAEngNews  
Mar 5

For #WorldEngineeringDay, our latest blog post takes a look back at the inaugural @engineering\_day event last year. In the twelve months that followed, the UN's #SDGs have only become more crucial: raeng.org.uk/news/blog-post... #GlobalGoals #WorldEngDay2021 #WED2021



Royal Academy of Engineering



Institution of Engineers Kenya





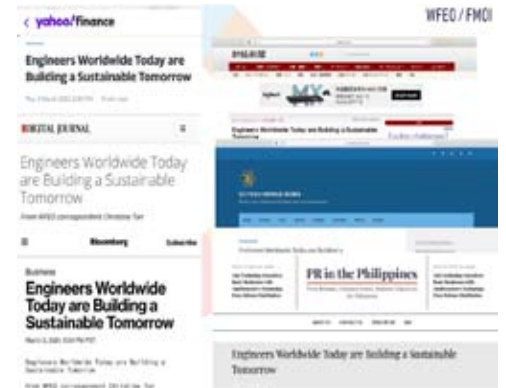
Gong Ke Magazine shot



Omaintec



WED personal greetings from India



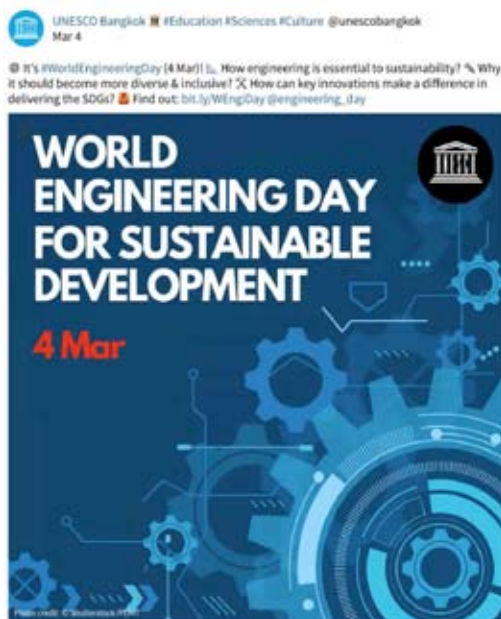
Print media



Nordic engineers



Global engineering futures



UNESCO Bangkok



The booklet that was released with a summary of presentations and conclusions of the World Engineering Day celebration events organized by The UNESCO Regional Science Bureau for Asia and the Pacific, Jakarta, in collaboration with the Association for Engineering Education in Southeast Asia and the Pacific (AEESEAP) and the Institution of Engineers, Indonesia, a national member of WFEO.

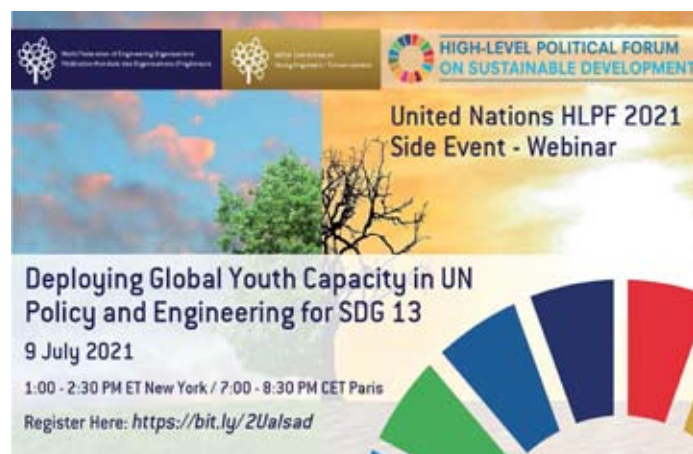
# WFEO and UN Relations

Our presence at the major UN events involving the High Level Political Forum and the Science, Technology and Innovation Forum, the UNFCCC COP meetings and the UN Commission on the Status of Women meetings, resulted in a high profile for WFEO in leading the discussion on the role of engineers for sustainable development and resilient infrastructure during the pandemic period.

The World Federation of Engineering Organizations UN Relations Committee (WURC) is a Policy Implementation Committee, with the mission of engaging with the different UN agencies as well as intergovernmental organizations requiring engineering content, systems, methodologies and analyses. The committee has enabled WFEO to contribute to the ongoing discussions at various UN agencies at the highest international levels. It is hosted by the American Society of Civil Engineers (ASCE) and Affiliate Member of WFEO since March 2021.

WFEO is active in the United Nations as the Co-Chair of the Scientific and Technological Major Group, with the International Science Council, the other Co-Chair. WFEO representatives attend the Science, Technology and Innovation Forum and the High Level Political Forums. A side event is held each year during these Forums on important issues relating to science, technology and engineering. WFEO has contributed to position papers on various aspects of engineering and sustainable development.

WFEO is also active in other UN agencies including UNIDO, UNEP, UNFCCC and others. The WFEO Committee on Engineering and the Environment has arranged side events at the Conference of the Parties (COP) climate meetings held each year. The WFEO Committee for Women in Engineering has also attended and participated in side events at the UN Commission on the Status of Women (CSW). WFEO representatives also attended the UNIDO General Assembly in Vienna and the UNOG meetings in Geneva.



WFEO hosted a side event on the 2021 UN HLPF virtually with the theme "Deploying Global Youth Capacity in UN Policy and Engineering for SDG 13" on 9th July 2021.



Member of UN Scientific and Technological Major Group, recognised as an ECOSOC accredited body



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



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



Accredited organisation with contribution to various programs



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



Observer status and contribution to natural disaster risk mitigation through engineering



Observer status and contribution on energy and technology matters



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



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





Ms Shamila Nair-Bedouelle, Assistant Director General, UNESCO, speaks at the WFEO Side Event at the United Nations Science Technology and Innovation Forum, 4th May 2021



#### ANNOUNCEMENT OF VIRTUAL NGOCWSW PARALLEL EVENT

### Empowering Women in STEM is Essential for Achieving the UNSDGs

SATURDAY 20 MARCH, from 1PM to 3PM GMT (UTC)

9AM EST/New York | 1PM UTC/London | 2PM Lagos/Paris | 9PM Singapore | 12AM Sydney



**Moderator: Gail Matthews**  
Immediate Past President,  
International Network of  
Women Engineers and  
Scientists



**Marlene Krings**  
Immediate Past President,  
World Federation of  
Engineering Organisations



**Je Jey Brindford**  
Chair of Board International  
Society for Urban Health,  
Speaking on behalf of  
International Science Council



**Wende Hildesley**  
Chair of Committee for  
Women in Engineering,  
World Federation of  
Engineering Organisations



**Sarah Peers**  
Project Manager and past  
Deputy President 2018-  
2020, International Network  
of Women Engineers and  
Scientists

Flyer for Side Event at the UN Commission on the Status of Women, New York, 20th March 2021



## White Paper

The value of Integrated Geospatial and Building Information Modelling (BIM) solutions to advance the United Nations Sustainable Development Goals (Agenda 2030) with specific focus on resilient infrastructure

The WFEO / WGIC / UN-GGIM White paper: "The value of Integrated Geospatial and Building Information Modelling (BIM) solutions to advance the United Nations Sustainable Development Goals (Agenda 2030) with specific focus on resilient infrastructure", a collaboration between WFEO, World Geospatial Industry Council (WGIC) and UN Committee of Experts on Global Geospatial Information Management (UN-GGIM). The project was initiated in 2019 and completed in 2020 and brought together experts and leaders from around the world to demonstrate the importance of geospatial information. The White Paper builds capacity by demonstrating implementation of geospatial technology through case studies from around the world and identifies critical challenges to implementation with recommendations on approaches for successful implementation based on the UN-GGIM Framework.



UN Secretary-General António Guterres at the opening ceremony of the 2nd United Nations Global Sustainable Transport Conference on 14th October 2021



# WFEO and International organization partners projects

Collaboration with our international partners in engineering has provided WFEO with a bigger voice and a larger platform to communicate the key message that engineering is critical to advancing the UN Sustainable Development Goals.

WFEO established key partnerships with international engineering organizations in March 2018 at its 50th anniversary celebrations and these relationships have grown in importance with successful collaboration and outcomes in many projects. We anticipate that these partnerships will develop further as we work on future initiatives relating to engineering education, capacity building in engineering, diversity and inclusion in science and engineering and engaging with the United Nations and its agencies.

WFEO collaborated with the **International Engineering Alliance (IEA)** on the review of the Graduate Attributes and Professional Competencies Framework and continues to work with IEA signatories to build capacity in engineering education in Africa, Asia and Latin America.

WFEO has been working with the **International Science Council (ISC)**, as Co-Chair of the United Nations Scientific and Technological Major Group, providing joint submissions on key areas of science, engineering and technology.

WFEO has worked closely with the leaders of the **International Federation of Consulting Organizations (FIDIC)** on engineering education and support for young engineers.

Diversity and Inclusion has been given a high priority in collaboration with the **International Network of Women Engineers and Scientists (INWES)** and **ISC** as well as with the engineering educators through the **International Federation of Engineering Educators (IFEEES)** and **Global Engineering Deans Council (GEDC)**.

The **International Centre for Engineering Education (ICEE)**, a UNESCO Category 2 Centre based at Tsinghua University, under the auspices of UNESCO, was an important partner in the review of the Graduate Attributes and Professional Competencies Framework, participating closely in the working group and testing the Framework in universities in China.

The **International Science Technology and Innovation Centre (ISTIC)** a UNESCO Category 2 Centre based in Kuala Lumpur, Malaysia, was an important partner for STEM capability and South-South Co-operation.

All partners worked closely with WFEO in the consultation phase of the review of the GAPC Framework and provided valuable commentary that was incorporated in the finalized Framework.

As a Category A Liaison Partner of the **International Organization for Standardization (ISO)**, WFEO also participated in the development of the ISO 37000 Standard on Governance of Organizations, published in September 2021. A Guidance document on the use of the ISO37001 Anti Bribery Standard was released in June 2021. WFEO Immediate Past President Dr Marlene Kanga was a member of the two Working Groups on the Technical Committee (TC 309) that developed these documents.



Prof. Wu Qidi, Director, International Centre for Engineering Education (ICEE), chairs the virtual Forum, Engineering Education for Sustainable Development, 4th December 2020.



Speakers at the On Line Forum on Engineering Education for Sustainable Development, hosted by the International Centre for Engineering Education (ICEE), and which included presentations on the revised Graduate Attribute and Professional Competencies Framework, 4th December 2020



# WFEO Diversity and Inclusion projects

WFEO has continued to raise the profile of its diverse members from all geographic regions and in particular increased the contribution from women and young engineers in all its activities. Women and young engineers were a focus at the World Engineering Day celebrations in March 2021 and the UN High Level Political forum in July 2021.

A high level event was held for the WFEO GREE 2020 Women in Engineering Award. WFEO collaborated with the International Federation of Engineering Education Societies (IFEES) to release the second volume of *Rising to The Top*, which featured 13 women engineers from WFEO members. All WFEO committees now have one or two women members and women engineers now chair some of these. At least 25 percent of speakers at WFEO conferences and events are women.

A statement on the key role of women engineers and scientists in advancing the UN Sustainable Development Goals was made to the UN Economic and Social Council (ECOSOC) in December 2020 by the International Network of Women Engineers and Scientists (INWES) and WFEO, together representing women in Science, Technology, Engineering and Mathematics (STEM) across 100 nations.

These two organizations are committed to attracting girls to undertake careers in STEM and play an important role in developing and supporting programs that encourage girls to study the enabling subjects of science and mathematics in school. Our organizations encourage parents, teachers and counsellors to support girls to study and pursue careers in science or engineering and provide support and advice to industry and government to retain women in the workforce, support women in their STEM careers, encourage them to achieve leadership positions and celebrate their achievements.

In the Statement, INWES and WFEO also reaffirmed the importance of managing technological and digital change for women's economic empowerment and the need to support women's access, throughout their careers, for skills development and decent work in new and emerging fields, by expanding the scope of education and training opportunities especially in STEM, information and communications technology and encourage digital fluency.

The Statement reaffirmed INWES and WFEO commitments to advancing the 2030 Agenda and increasing the participation of women in STEM careers is critical to achieving the United Nations SDGs, including to:

- Continue to develop projects and programs to attract more girls, especially in Africa and Asia to undertake studies in science and mathematics in high school.
- Encourage young women and girls to consider careers in science, technology and engineering.
- Continue to showcase the achievements of women scientists and engineering in our regional and international events and conference and include topics relating to gender and sustainable development as themes/major tracks.
- Continue efforts in outreach programs to girls with information workshops for parents and educators on careers in STEM.
- Encourage and support leadership development of women engineers and scientists through seminars.



- Encourage governments and industry to attract and support women in STEM, and to address the need for diversity in STEM fields at all levels in the efforts to achieve the United Nations SDGs in their organisations.
- Support research and develop innovative projects on the role of women in science, technology and engineering, and
- Ensure that women receive the education, legal and social protections, and support to pursue careers in STEM to achieve their personal aspirations, contribute to the economic futures of their countries and achieve the empowerment of women and the 2030 Agenda.



Leading women engineers from WFEO, International Science Council (ISC) and INWES present at the UN Commission on the Status of Women (CSW), 20 March 2021.

L to R top row: Dr Jo Ivey Boufford, ISC, Dr Marlene Kanga, WFEO, Dr Sarah Peers INWES. L to R bottom row: Ms Gail Mattson INWES, Ms. Yetunde Holloway, WFEO.





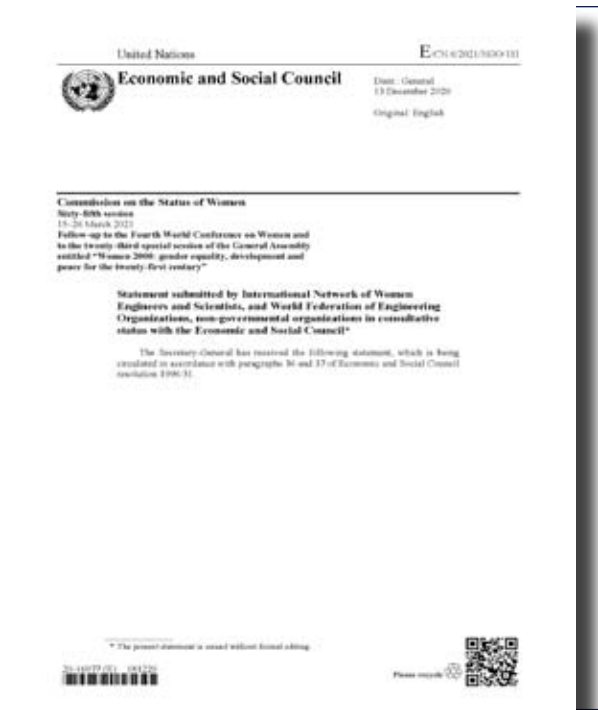
Screenshot of the webinar which was hosted by WFEO and IFEEES to celebrate the release of Rising To The Top Volume II which features 13 women engineering leaders from WFEO members, 5th March 2021.



WFEO in partnership with IFEEES, hosted a discussion panel on COVID-19 and impacts on women in STEM on International Women's Day, 8th March 2021. Sessions were held in every geographic region. The screenshot above is of the session comprising delegates from Asia and the Pacific. Moderator Dr Soma Chakrabarti, Vice President IFEEES at bottom left, Panelist Dr Marlene Kanga, Immediate Past president WFEO, bottom right.



WFEO GREE Women in Engineering Virtual Award Ceremony including the award winner, Prof Elvira Fortunato top row, third from left, the UNESCO Assistant Director General bottom row, left and WFEO President bottom row, extreme right, 9th April 2021.



Joint statement in celebration of International Day of Women and Girls in Science, 11 February 2021, from INWES and WFEO was accepted by ECOSOC and is published on their website. This is the first time that a written statement has been made and accepted.



Ms Ania Lopez, WFEO National Member Representative at the Executive Council, representing the National Council of Engineers (CNI) Italy, the first woman to chair the WFEO Award Committee.

# WFEO in SIDS / Climate Change Education

WFEO members in the Small Island Developing States (SIDS) are a specific focus for education to understand climate change and for capacity building in engineering education.

WFEO has supported its Small Island Developing States (SIDS) with a number of projects, especially in Mauritius including:

- Showcasing young engineers with the speech by Ms Genna Bangaroo, Civil Engineering Student, Mauritius on 4th March World Engineering Day 2021 and launch of the second UNESCO Engineering Report. Ms Bangaroo was also featured in a podcast that reached the top 50 in the world during March and April 2021 as a result of the large number of downloads.
- Celebrating the win of Roshan Teeluck, from The Institution of Engineers Mauritius, in the global Young Engineers Video Competition held for World Engineering Day 4th March 2021.
- Providing engineering education capacity building programs for Mauritius with support from the National Board of Accreditation India and Engineering Council of South Africa, for the Institution of Engineers Mauritius to achieve international signatory status at the International Engineering Alliance.
- Delivering a climate change education program for primary and secondary school teachers in Mauritius in collaboration with UNESCO, the Office of Climate Change Education, a UNESCO Category II Centre, the Institution of Engineers Mauritius, the Mauritius Institute of Education and the National Environment Agency. This program will have long term impact arising from the networking opportunities, the development of a Community of Practice and curriculum change in the teaching of this topic in schools. Approximately 80 teachers attended with an impact on thousands of students. This program also created greater awareness of the role of engineering in addressing climate change.
- Support for a special issue of the Institution of Engineers Mauritius journal on Engineering and the Future with international and national authors on the key role of engineers for sustainable development in Mauritius. Key WFEO leaders, young engineers, women and partners including Immediate Past President Dr Marlene Kanga, contributed to the book which was released on World Engineering Day 4th March 2021.



Mentoring for capacity building by WFEO Committee for Engineering Education Chair Prof. Dr Charlie Than, WFEO Immediate Past President Dr Marlene Kanga, National Board of Accreditation India, Dr Sanjay Agarwal and representatives from Institution of Engineers Mauritius, April 2021.



Launch of Institution of Mauritius Journal on UN Sustainable Development Goals and Small Island Developing States, World Engineering Day, 4th March 2021.



Opening of the Climate Change Education Workshop, for primary and secondary school teachers in Mauritius, 29-30 June 2021.



Roshan Teeluck, from The Institution of Engineers Mauritius, winner of the global Young Engineers Video Competition held to celebrate World Engineering Day 2021.

## Standing Technical Committees

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Committee on Disaster Risk Management (CDRM)



Committee on Energy (CE)



Committee on Engineering Capacity Building (CECB)



Committee on Engineering and the Environment (CEE)



Committee on Education in Engineering (CEIE)



Committee on Engineering for Innovative Technologies (CEIT)



Committee on Information and Communication (CIC)

## Policy Implementation Committees

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Committee on Anti Corruption (CAC)



Committee on Women in Engineering (WIE)



Committee on Young Engineers / Future Leaders (YEFL)

## Working Groups

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Working Group on Infrastructure Report Card (WGIRC)



Working Group on Water (WGoW)



WFEO-UN Relations Committee (WURC)





In transit to the “new normal conditions”, the Committee is called to lead a profound and global analysis on our previous misunderstanding of the enormous destructive power of pandemics, the need for improved risk scenarios, early warning, and education to recommend prompt, effective and agreed measures, customized to each society, to build resilience and avoid future global disasters.

**Jorge Macharé,**  
Chair of CDRM,  
Peruvian Engineers Association

## Resilient societies as the main objective

Within the framework of SDGs, notably SDG 11, and the objectives of the Sendai 2015 agreements, resilience appears to be the paramount situation to be achieved by societies at all scales, from local to global. Resilience, defined as the capacity to resist, absorb, accommodate to and recover from the effects of any hazard in a timely and efficient manner, has the disaster risk management (DRM) as a main tool.

Based on the expertise of its members, the CDRM has developed outreach and capacity building activities to highlight the engineering contribution to resilience building through DRM processes. Considering the variety of natural and man-made hazards and the different levels of vulnerability in countries or regions, the disaster scenarios are uncountable, and therefore, risk management takes distinct schemes around the world. Although varying in details and terms of the processes involved, all DRM systems include them into three component groups acting a) before and after the event: prospective and corrective management, and b) during the event: reactive management.

The CDRM organized three specialized short courses about strategies and engineering techniques to manage risk related to: a) Tsunamis, b) Volcanic eruptions, and c) Debris-and-mud flows. Each course was composed by five or six high level lectures, that were kindly delivered by outstanding engineers and geoscientists from 15 countries every week. The courses were attended by around 300 young professionals and technicians working on DRM in many countries.

In March 2021, on World Engineering Day, the committee organized the webinar “Toward resilient societies: The engineering contribution”. Three masterly keynote presentations were given by Dr. Eric Ma (Hong Kong), Eng. Roger Fairclough (NZ), and Engs. Andrea Chacon & Marcial Rivera (Costa Rica).

“Disaster Risk Management an integral part of Resilience: The Engineering Contribution” is the title of a booklet that the committee is to finish this year. About fifty pages written by the CDRM members including case studies and recommendations on the themes Land use planning, Infrastructure systems, Data and information management, Capacity building, Early warning systems, and Institutionalility.



## 11 SUSTAINABLE CITIES AND COMMUNITIES



The booklet that the committee is preparing provides a general framework on how to build and implement resilience to disasters through risk management strategies. Six key elements have been identified, which will allow customizing this framework in different countries.

## 17 PARTNERSHIPS FOR THE GOALS



The committee has established cooperation links for the development of its activities, as well as the exchange of knowledge with important centers, universities and international associations related to disaster risk management.

## Pandemics, the unexpected hazard

Starting year 2020 while the CDRM was recomposing its membership and reorganizing its internal structure, the COVID-19 pandemics started. It appeared as a protracted event of a not new but unexpected hazard. Indeed, pandemics were known along the history, and several epidemics had struck large regions during the last hundred years. In general, they were managed by health services without major intervention of disaster-related agencies, though these phenomena are listed as natural hazards of biological origin.

In December 2020, the Committee organized the webinar entitled “Engineering contributions for managing the next pandemics” that included conferences by three outstanding invited speakers: Dr. Carina Fearnley (UK), Dr. Simiao Chen (China), and Dr. Michael O’Sullivan (New Zealand), as well as two panelists: Eng. Marcial Rivera (Costa Rica) and Arq. María Estrada (Peru) that promoted an interesting discussion.

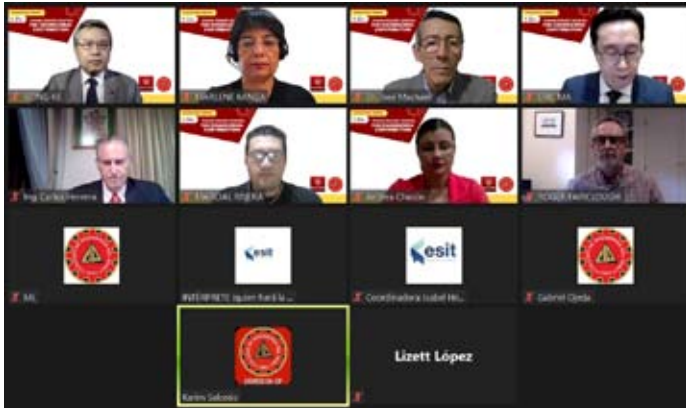
The conclusions are published in the CDRM Newsletter. In June 2020, the Committee chairman published the paper Disaster risk management and Engineering facing Covid-19 in Peru. Despite its national scale, it raises the question on the probable need of an international system to manage the risk of this kind of disaster.

## Key achievements

In 2020, four working groups (WGs) were formed, according to the areas of knowledge and expertise of the committee members. The objective of the WGs is to elaborate a booklet on the topic of resilience. The WGs are working on drafting chapters for the booklet, in order to present a first draft this year.



CDRM annual meeting in Melbourne, Australia, November 2019.



Opening session on "Towards Resilient Societies – The Engineering Contribution". Prof Gong Ke, WFEO President, top left row, WFEO Immediate Past President top row second from left, Chair WFEO Committee for Disaster Risk Management top row third from left, President College of Engineers Peru (CIP) Eng Carlos Herrera Descalzi, Second Row, first left, celebrations for World Engineering Day 2021.



Resilient Infrastructure Systems working group meeting, 27 May 2021.



Members of the Capacity Building working group, 1 July 2021.



The Committee on Energy's objective is to be the Engineering reference for programs, strategies and policies aiming to move toward sustainable and resilient energy systems around the world. As energy is intimately linked to transitions in societies and economies, the Committee's considerations include the consequences of the Covid-19 pandemic.

**Jean Eudes Moncomble,**  
Chair of CE,  
Ingénieurs et Scientifiques de France

For the past two years, due to the pandemic, the Committee on Energy has been meeting once a quarter by videoconference. In addition to these plenary meetings, the working groups dedicated to a theme or to the preparation of an event meet regularly.

Several Task Groups were created or re-launched in the past two years: Solar Power, Energy Internet, Energy Storage, Hydrogen and Electrification. These groups provide the factual knowledge from which documents presenting more systemic approaches are developed. This is, for example, the case of the contribution "Developing Sustainable and Resilient Energy Systems" to the UNESCO report «Engineering for Sustainable Development», which highlights the contribution of different energy sources and technologies to progress towards SDGs.

The pandemic has not only disrupted the Committee's way of working, it has also put new risks and challenges at the top of the agenda. Rapid changes in stakeholders' behaviour have led to major shifts in energy supply and demand and to a reconsideration of strategies and policies in a new context where engineering will play a major role. This is the motivation of the Symposium organized by the Committee on Energy on October 6 and 7, 2021: "Energy transition and Covid-19 crisis: the role of engineers".

Our societies demonstrated strong resistance and resilience. However, in addition to the challenges that existed before the pandemic to move towards sustainable energy systems, new challenges have emerged that must be addressed by a world impoverished and exhausted by the health crisis. More than ever, then, the notions of optimisation, resilience, and efficiency will form the cornerstone of the system we must rebuild – and that is the role of our engineers.

The Symposium has first focused on the feedback from this period: how resilient were the energy systems to the Covid-19 crisis. Then, a session was dedicated to think about a broader definition of energy system resilience, based on a new understanding of risks. Sessions discussing the evolution or disruption of energy demand and supply have shown the importance of social behaviour (both consumers and citizens) which is a key driver of the transformation of our societies beyond the Covid crisis itself. At the end of the symposium, a roundtable has given the opportunity to specify what could be the contribution of engineers in the world to come.



**SUSTAINABLE  
DEVELOPMENT GOALS**

**7 AFFORDABLE AND  
CLEAN ENERGY**



The 7th SDG is obviously closely linked to energy issues and highlights two major challenges: physical and economic access to energy, because billions of people do not have access to satisfactory cooking modes or to electricity; the limitation of environmental damage because any form of energy has negative impact on our planet and its inhabitants.

**13 CLIMATE  
ACTION**



One of the causes of global warming is the use of fossil fuels, which highlights the major relationship between energy and SDG 13. It is essential to promote decarbonized energies (renewable and nuclear) or technologies that make the use of fossil fuels acceptable. But the adaptation of energy systems to the consequences of climate change is also a major challenge.



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

**Energy transition and Covid-19 crisis:  
the role of engineers**



Cover of the proceedings of the "Energy transition & Covid-19 crisis: the role of engineers" symposium



## Key achievements

Two key achievements are representative of the work of the Committee on Energy during the last two years: on the one hand the contribution to the UNESCO report "Engineering for Sustainable Development" because it starts from the scientific and technical expertise to elaborate recommendations on the energy systems considered globally and on the other hand, the Symposium "Energy transition & Covid-19 crisis: the role of engineers" which highlights the link between the sustainability and the resilience of energy systems.

Many outputs have been made available, including the proceedings of the Symposium, freely accessible, which bring together in a coherent way all the interventions and discussions.

The Committee on Energy continues to work actively on other global issues. After the COP26 meeting, it was decided to think, from an engineer's point of view and in a very pragmatic way, about the technologies that could actually be used. A working group has recently been set up in this sense and should make recommendations on technologies that will enable us to move towards the necessary carbon neutrality.



**World Federation of Engineering Organizations  
Committee on Energy**  
www.wfeo.org/committee-energy

WFEO Committee on Energy will organize an online symposium in English on October 6 and 7.

**Energy transition & Covid-19 crisis: the role of engineers**

*The Covid-19 pandemic has disrupted our economies and our lifestyles, but both climate and biodiversity emergencies are still with us. New health, economic, political and societal uncertainties complicate the fight against environmental damages and require more efficiency and realism, cooperation and solidarity.*

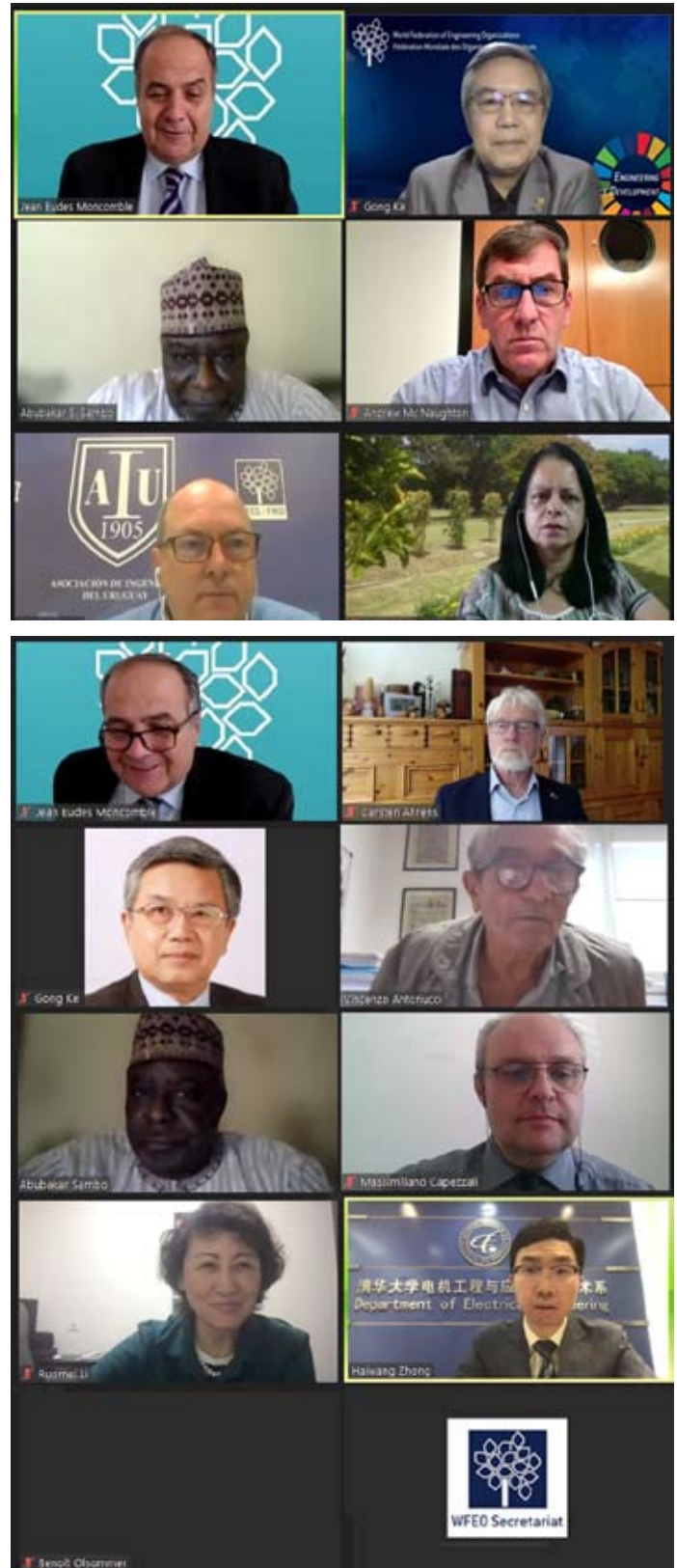
*Just over a year ago, let's remember that there were many debates on the energy transition: the stakes were mainly environmental, with the fight against climate change at the top of the list. The composition of the energy mix, the capacity of our societies to evolve towards other modes of transport and the consequences of the emergence of digital technology were discussed. To name but a few of the debates that were very present in the "world before".*

*And then the Covid-19 pandemic struck, a shock of unprecedented violence that surprises us more and more each day by its power, its persistence and the extent, still poorly estimated, of its consequences. Has it modified, directly or through its numerous consequences, our perception of energy issues or of possible energy transitions? What will be the contribution of the engineers in building our new energy landscape?*

Wednesday 6 <sup>th</sup> October	Thursday 7 <sup>th</sup> October
<b>13:00 – 13:30</b> <b>Paris time</b> <b>Opening session</b> <b>Keynote:</b> Prof. Gong Ke, WFEO President (China) <b>Presentations:</b> Jean Eudes Moncomble, WFEO Energy Committee Chair (France)	<b>13:00 – 14:00</b> <b>Paris time</b> <b>Session 3 - Energy demand: evolution or disruption?</b> <b>Lucas Ardèaux (Italy)</b> <b>Daniel Olsommer (Switzerland)</b>
<b>13:30 – 14:30</b> <b>Paris time</b> <b>Session 1 - Resilience of energy systems to Covid-19 crisis: experience feedback</b> <b>Miguel Fierro (Uruguay)</b> <b>Abubakar Samba (Nigeria)</b>	<b>14:00 – 15:00</b> <b>Paris time</b> <b>Session 4 - On the supply side: the demands of the citizens</b> <b>Carsten Ahrens (Germany)</b> <b>Haiwang Zhong (China)</b>
<b>14:30 – 15:30</b> <b>Paris time</b> <b>Session 2 - A larger definition for resilience: a new understanding of risks</b> <b>Andrew McNaughton (United Kingdom)</b> <b>Moula Nivarditi (Mauritius)</b>	<b>15:00 – 16:00</b> <b>Paris time</b> <b>Roundtable: Lessons learned so far: the role of engineers</b> <b>Masimiliano Capetzzi (Switzerland)</b> <b>Ruomei Li (China)</b> <b>Abubakar Samba (Nigeria)</b> <b>Moderator: Jean Eudes Moncomble, WFEO Energy Committee Chair (France)</b>

Information: <https://bit.ly/3mUmgP>  
 Registration: <https://bit.ly/3kF4joe>

Program of the "Energy transition & Covid-19 crisis: the role of engineers" symposium



Speakers at the "Energy transition & Covid-19 crisis: the role of engineers" symposium, 6 and 7 October 2021.



Capacity Building in the engineering environment is a lever for economic, social and sustainable development, and is recognized as a priority in the global engineering community. Our committee is dealing with this important component of informed decision making on several fronts especially to contribute to the SDGs and other developmental aspirations in infrastructure, human capital, and overall quality of life.

**Martin Manuhwa,**  
Chair of CECB,  
Engineering Council of Zimbabwe

The WFEO CECB is hosted by the Engineering Council of Zimbabwe (ECZ), a WFEO National member. Its mandate is to cover the Capacity Building Space in institutions, individuals, technical standards, through workshops, conferences, webinars, training and continuous professional development.

Capacity Building in engineering is key for economic, social, and sustainable development, and is recognized as a priority in the global engineering community. The CECB acts as a mechanism to harmonize and align as well as integrate capacity building initiatives. The Committee activities and projects are spread to cover the whole world.

The CECB was confirmed by the WFEO Extraordinary General Assembly on 25 March 2021. Our UN Sustainable Development Goals focus is Goal 16 and 17 as well as supporting most STCs on their capacity to deliver their goals especially, 4, 5 and 9.

The following are the themes for 2019-2021 which will produce tangible outcomes.

The Committee is working on projects and programme to deal with the challenges faced by the developing world that include urbanization, employment, food security, water security, energy security, environment degradation, climate change, natural disasters, and poverty. WFEO can help to tackle such challenges in the developing world.

The Committee will deal with Engineering Capacity Building in Developing and Developed Countries. The committee will advise on how organisations, individuals and the public can deal with lack of capacity as well as give Information on Engineering Capacity Building conventions, forums, indices, and surveys.

Selected projects are:

- Keynote Events and Capacity Building Workshops are held at the Africa Engineering Week, WFEO Council Meetings, General Assemblies, Congresses, Forums, Conferences and Conventions.
- Engineering Capacity Building Publications (webinars, newsletters, magazines).



## SUSTAINABLE DEVELOPMENT GOALS

### 16 PEACE, JUSTICE AND STRONG INSTITUTIONS



Three Webinars on Capacity Building – One with Ecorys, an economic research and consulting company, and two with UNESCO Southern Africa.

Implementation of the Digital Transformation WFEO CECB platform and information repository for CPD, Project Management and SDG Capacity Building tracking.

The CECB is mandated to arrange events associated with the Capacity Building initiative in both developing and developed worlds; and arrange for activities including workshops and presentations at WFEO events. The committee meets quarterly (both virtually and physically). CECB attended the Engineering Institution of Zambia where the AAP Accord was signed by the FAEO and FEIAP President.

### 17 PARTNERSHIPS FOR THE GOALS



WFEO CECB is supporting a project under the Institution of Engineers India, Federation of African Engineering Organisations for use of technical expertise from the Engineering Staff College in India (ESCI), Hyderabad, to assess feasibility of setting up regional training institutes for maintenance of infrastructure in South and East Africa.

Furthermore, the project will assist the two regional institutes acquire assets for use in maintenance training and lastly, provide resources for the institutes to conduct training within the envisaged 3-year life of the project.

This is a great example of a South South cooperation. The other partners to this project were the United Nations Office for South-South Cooperation (UNOSSC) office in Djakarta, Institution of Engineers Rwanda, Engineering Council of Zimbabwe, Zimbabwe Institution of Engineers and the International Science, Technology, and Innovation Centre for South-South Cooperation (ISTIC)

WFEO CECB, the South African Department of Science and Innovation (DSI) and the Federation of African Engineering Organisations (FAEO) have teamed up with the Council for Scientific and Industrial Research (CSIR), Water Research Commission (WRC), and other WASH Centres of Excellence (CoE) in Africa and the Commonwealth Business School (CBS) to build the capacity in water and sanitation, initially to respond to the Covid-19 pandemic and solve other infrastructure problems in Africa. A pilot project is being done in South Africa; it will be rolled out to other parts of Africa.



Engineering Capacity Building Awareness, Training and Development of Systems and Standards. As well as Developing and promoting Engineering Capacity Building policies, strategies, and practices for sustainable development.

Engineering Capacity Building Projects and cooperative initiatives. These will achieve formal adoption of WFEO Engineering Capacity Building programmes by governments, funders, project owners, companies, and business associations/professional institutions.

WFEO members will adopt a set of measures through the Committee, designed to help improve Engineering Capacity Building on major projects. The Committee will draft practice guidelines and policies related to Engineering Capacity Building for the consideration and approval of the WFEO Executive Council and WFEO members.

## Key achievements

Converting Ideas to Reality: UNESCO Africa Engineering Week (AEW) – Bringing Nations, Societies, and Policy Members together at the 2021 edition which were held in Ghana in October 2021. The host was GhIE, a WFEO national member, under the theme "Engineering and trade facilitation" discussed trade of services and goods, transportation infrastructure, intellectual property, and alternative dispute resolution.

The FAEO, a WFEO international member entered into agreement with the African Continental Free Trade Area (AfCTA) during the AEW.



1. United Nations, Statistics Commission Fiftieth session, Inter-Agency and Expert Group on Sustainable Development Goal Indicators (SAG-SDG), 2019 Data Disaggregation and SDG Indicators "Policy Priorities and Current and Future Disaggregation Plans" Available on: <https://unstats.un.org/unsd/sdg-indicators/documents/2019-Data-Disaggregation-Plan.pdf>

Challenges of Leaving No One Behind with Specific Reference to Africa  
Source: United Nations, Statistics Commission Fiftieth session, 2019



The ZOOM meeting for the India - Africa Capacity Building Projects with participants from FAEO, ISTIC, UNOSSC, WFEO CECB, IEI and ESCI.



WFEO CECB in a meeting discussing Capacity Building Co-operation between Asian WFEO National Members and Africa. IEI President Narendra Singh Chaired the Meeting. The WFEO President was in attendance



President of WFEO Prof Gong Ke and CECB Chair in Hyderabad inspecting the facilities of the ESCI with the IEI Past Presidents Eng. Ashok Basa and Eng. Navin Vasoya





As an engineering community, we have the responsibility to address the SDGs. The work of the Committee on Engineering and the Environment is aimed at enabling WFE0 and the global engineering profession to support the achievement of these goals, addressing, in particular, SDG13.

**Davide Stronati,  
Chair of CEE,  
Institution of Engineers UK**

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

1. Environmentally sustainable and accountable engineering practices and technologies;
2. The adaptation of infrastructures to the impacts of a changing climate (SDG 13), decreasing resources and increased populations;
3. Assessing and promoting engineering practices to mitigate climate change (SDG 13);
4. Coordinating perspectives on the engineering required to deliver SDGs 6, 7, 9 and 11;
5. Policy frameworks sets of guidelines and best practice for practicing engineers on responsible environmental stewardship and sustainable and ethical practices in various areas of engineering practice.

Since 2019, the CEE has continued work on SDG 13 'climate action', primarily through its task groups on Climate Change Adaptation and Mitigation.

Members of the CEE regularly attend the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP) meetings to promote the role of engineers in combating climatic uncertainty.

At COP25, WFE0 launched the WFE0 Declaration on Climate Emergency, which has now been signed by 28 countries. The China Association for Science and Technology, Federation of African Engineering Organizations (FAEO) and Ingénieurs et Scientifiques de France (IESF) are amongst the signatories. Davide Stronati presented at two sessions with the Royal Academy of Engineering (RAEng) and Instituto de la Ingeniería de España (alongside Tomas Sancho) on the Declaration. Davide also sat on a panel for Women in Engineering and Climate Change alongside CEE member Lylian Coelho Ferreira.

The CEE is currently working on activities and messaging for COP26 in November 2021, in partnership with the WFE0 Women in Engineering and Young Engineers/Future Leaders committees.

Among other projects, the CEE plans to showcase its Climate Change Mitigation Best Practice Project, of which the pilot study is currently underway.



**SUSTAINABLE  
DEVELOPMENT GOALS**

**13 CLIMATE  
ACTION**



WFE0 and the CEE express their deep concern on the matter of climate emergency, and therefore launched the Declaration on Climate Emergency following the WFE0 2019 General Assembly in Melbourne, and in the frame of the COP25 held from 2 to 13 December 2019 in Madrid.

WFE0 has summarized its position and commitment to act quickly through this Declaration on Climate Emergency, which has now been signed by 28 professional engineering bodies.

The WFE0 Model Code of Practice on Principles of Climate Change Adaptation for Engineers was adopted at the December 2015 General Assembly. It was prepared by CEE members as a complement to the WFE0 Model Code of Ethics for Engineers and the Model Code of Practice for Sustainable Development and Environmental Stewardship. Since then, the CEE has been working to promote this code, and in 2021 has held workshops with WFE0 National Members on adopting its principles.

Since 2019, Engineers Canada and Polytechnique Montreal have continued their Massive Open On-Line Course "Sustainability in Practice". This free, four module course presents the principles explained in the WFE0 Model Code of Practice for Sustainable Development and Environmental Stewardship and the equivalent national guideline published by Engineers Canada. WFE0 and CEE promote the course to national and international members each year.

On World Environment Day in June 2020, Davide Stronati and WFE0 President Gong Ke wrote and signed the WFE0 position to the build-back-better call for arms. The key message was that our decisions and actions in response to the COVID-19 pandemic can set us on a course for environmental recovery, if we act now.

2021 also saw CEE members contributing to the Triennial Conference hosted by the Canadian Society for Civil Engineering (CSCE). This conference is jointly organized every three years by three civil engineering societies that total more than 300,000 members, the American Society of Civil Engineers (ASCE), Institute of Civil Engineers (ICE) and Canadian Society for Civil Engineering (CSCE).

## Key achievements

### The WFEO Declaration on Climate Emergency

WFEO and the CEE launched the Declaration on Climate Emergency following the 2019 General Assembly in Melbourne, and in the frame of the COP25 held from 2 to 13 December 2019 in Madrid.

### WFEO Climate Stories

For World Engineering Day 2021 and in conjunction with ICE, the CEE published a series of WFEO Climate Stories blogs which were published on the World Engineering Day, WFEO and ICE websites.



Chair of CEE Davide Stronati with Chair of the WFEO Working Group on Water, Tomas Sancho at the COP25 session of the Instituto de la Ingeniería de España, December 2019.



Launch of the WFEO Declaration on Climate Emergency at the COP25.

## WFEO Climate Stories on World Engineering Day

ICE is hosting the World Federation of Engineering Organizations' (WFEO) [Committee on Engineering and the Environment](#) from 2019 to 2023. On World Engineering Day, CEE chair Davide Stronati considers what we can learn from the recent WFEO Climate Stories blog series.



Chair of CEE Davide Stronati (Second from the left) at the Instituto de la Ingeniería de España.



The key objective of the Committee is the development of professional engineering education benchmarks and collaboration with different education institutions to upgrade the standards of engineering education accreditation for WFEO members, to achieve more qualified engineers with the appropriate skills to address the critical needs for sustainable development.

**Zaw Min Aung,  
Acting Chair of CEIE (TBC),  
Myanmar Engineering Council**

The Committee emphasizes SDG Goal 4, Quality Education, and in the process of implementation, recognizes that teachers and educators are the keys to achieve all of the SDG4 targets. Improving the quality of teachers and pedagogy, CEIE concentrates on mentoring of educators in developing countries, especially least developed countries and Small Island Developing States (SIDS), ensuring accreditation of programs align with the guidelines of the International Engineering Alliance (IEA), through international WFEO members cooperation.

A total of 29 organizations from 23 countries have nominated 35 members in the CEIE committee. Two Working Groups have been established and are progressing well.

The first Working Group led by Prof. A. Bulent Ozguler of MUDEK with three other IEA working group members and 7 WFEO working group members, including Immediate Past President Dr. Marlene Kanga and Prof. Charlie Than, conducted a thorough review of International Engineering Alliance Graduate Attribute and Professional Competency Framework in two phases: October 2019 to June 2020 and June 2020 to February 2021.

In the process, a questionnaire was distributed to all IEA signatories and agreement parties as the primary target group and to a few multi-national engineering companies as a secondary target. Thirteen organizations worldwide responded with views and suggestions. The Review of the Engineering Education Benchmarks for Graduate Attribute and Professional Competencies (GA-PC) was approved by the International Engineering Alliance Annual Meeting in June 2021.

The second Working Group met on 21 November 2019 in Melbourne. Kenya, Ghana, Zimbabwe, Mauritius, and Brazil were keen to be mentored and provided information subsequently. WFEO Members and IEA Signatories who have agreed to provide mentoring support include Myanmar Engineering Council (WFEO Member, IEA Provisional Signatory), National Board of Accreditation India, NBA (through IEI India, WFEO Member), Pakistan Engineering Council (PEC), Institution of Engineers Sri Lanka (WFEO Member), China Association for Science and Technology (CAST, WFEO Member and IEA Signatory), Board of Engineers Malaysia, BEM (IEA Signatory, mentoring support for Engineering Board of Kenya, EBK), Engineering Council of South Africa (IEA Signatory, prior mentoring arrangement for Institution of Engineers Mauritius, IEM).



**SUSTAINABLE  
DEVELOPMENT GOALS**

**4  
QUALITY  
EDUCATION**



The Committee focus is on SDG 4 – Education through:

The review of the Graduate Attributes and Professional Competencies Framework that underpins the engineering education programs in more than 30 countries

Mentoring institutions to achieve the requirements of the international benchmarks to improve the quality of engineering education around the world. This also contributes to SDG 16, for strong institutions in engineering education.

The Committee is working in partnership with mentoring organisations which is relevant to SDG17

The second meeting was held virtually on 26 February 2021. Dr. Peggy Oti-Boateng, Director, Capacity Building Section, Natural Sciences Sector, UNESCO Paris, and Prof. Elizabeth Taylor, Chair of the Washington Accord, attended the meeting.

Mentoring programs of Engineering Board of Kenya and Institution of Engineers Mauritius are organized and conducted online monthly since March 2021. Mentoring tracking schedules are closely monitored to meet CEIE's aim to achieve new IEA signatories in the near future.

Myanmar Engineering Council hosted the International Conference on Engineering Education Accreditation, ICEEA 2021, virtually from 14 ~ 16 January 2021, presided by Prof. Charlie Than, Chair of CEIE, with the theme of "Quality Engineering Education towards Sustainable Development". The conference catalyzed academia from the international and Asia Pacific region to share experience and exchange their good practices and insights from their engineering education and accreditation practice perspectives.

The speakers from established organizations included United Nations Educational, Scientific and Cultural Organization (UNESCO), International Engineering Alliance (IEA), WFEO, Federation of Engineering Institutions of Asia and Pacific (FEIAP), Institute of Engineering Education Taiwan (IET), Engineers Australia (EA), Accreditation Board for Engineering and Technology, Inc., (ABET), Board of Engineers Malaysia (BEM), Institution of Engineers, Malaysia (IEM), China Association for Science and Technology (CAST), Philippines Technological Council (PTC), National Board of Accreditation (NBA), Institution of Engineers India (IEI), Institution of Engineers Singapore (IES), and TH Georg Agricola University (THGA).



## Key achievements

The UNESCO WFEO IEA Working Groups were established in November 2019 following the renewal of the MoU and the Declaration on Engineering Education in Melbourne at WEC 2019.

The two working groups addressed:

- Changes to the IEA Graduate Attributes and Professional Competencies Framework approved by IEA Signatories, June 2021.
- Support for professional engineering institutions and accreditation organisations to achieve international recognition as IEA signatories with mentoring programs for Engineers Board of Kenya and Institution of Engineers Mauritius, were successfully established with monthly meetings. The mentors are Pakistan Engineering Council, Board of Engineers Malaysia, National Board of Accreditation India and Engineering Council of South Africa.

Myanmar Engineering Council hosted International Conference on Engineering Accreditation, ICEEA 2021, virtually in January 2021, led by the Committee Chair Prof. Dr Charlie Than.



An inaugural meeting of UNESCO WFEO IEA Working Group on 21 November 2019 in Melbourne



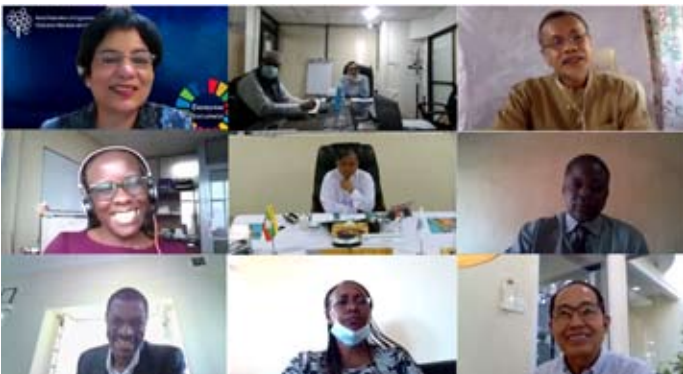
The mentoring session of the Institution of Engineers Mauritius (IEM) with National Board of Accreditation (NBA, India) & Engineering Council of South Africa (ECSA) since March 2021



The International Conference on Engineering Education Accreditation (ICEEA) 14-16 January 2021



The Virtual Introductory Meeting of UNESCO WFEO IEA Working Group, 26 February 2021



The mentoring session of Engineers Board of Kenya (EBK) with Pakistan Engineering Council (PEC) & Board of Engineers Malaysia (BEM) since March 2021



The Committee on Engineering for Innovative Technologies (CEIT), hosted by China Association for Science and Technology since 2015, undertakes to lead the engineering profession worldwide towards promotion and application of engineering for innovative technologies for sustainable development and helping developing countries to close the technology gap which is essential to achieve the UN 2030 Sustainable Development Agenda. CEIT now has 44 members from five continents.

**Jing Peng,**  
Chair of CEIT,  
China Association for Science and Technology



**SUSTAINABLE DEVELOPMENT GOALS**

**9 INDUSTRY, INNOVATION AND INFRASTRUCTURE**



Innovative technologies are attracting more and more researchers and investment. Innovations in these fields are spurred. New sustainable industries are created and will explore in the near future. The Goal of the Committee is to advance the use of innovative technologies, especially Artificial Intelligence and Big Data, for sustainable development.

## **Innovative Technologies Facilitating Sustainable Development**

- **the Session on Innovative Technologies** was hosted by CEIT in November 2019 during the World Engineers Convention (WEC) 2019 in Melbourne, Australia. Four speakers joined the session and had an efficient discussion on the responsible conduction of innovative technologies to achieve the UN Sustainable Development Goals.

## **Innovative Technologies contributing to Sustainable transportation - the UN/WFEO Call for Innovations: Youth Creativity for Sustainable Transport**

was initiated by CEIT in 2019. Seven submissions were received from six countries on smart transport, deformation inspection system, solar-powered electric vehicles, car accident reducing device, etc. After reviewed and evaluated by an expert panel, certificates were given to the winner and all participants in recognition of the excellence and innovativeness of their solutions.

## **Innovative Technologies Leading a Sustainable Future - the webinar A Sustainable Future: Young Engineers and the Fourth Industrial Revolution**

was co-organized by CEIT and the Committee on Young Engineers / Future Leaders (YE/FL) in September 2020 during the 23rd China Beijing International High-Tech Expo. Four speakers from Australia, China and Lebanon talked about the role of data, AI and sustainability concepts in the fourth industrial revolution, young engineers, data-driven business process, values of engineering.

## **Innovative Technologies Assisting Poverty Alleviation - the webinar on Engineering in Poverty Alleviation**

was co-organized by CEIT and the Committee on Women in Engineering (WIE) in March 2021. Nine speakers from China, India, Italy, Malaysia and Nigeria illustrated successful cases and shared insights in the role engineering and innovations have played in poverty reduction.

## **Highlighting contributions of Young Engineers - Video Campaign: Young Engineers Leading the Way**

was co-organized by YE/FL and CEIT for World Engineering Day in March 2021. More than 40 young engineers from 20+ countries submitted their videos that were later reviewed to select one winner. The videos showcase contributions from young engineers in making a more sustainable, resilient, and inclusive world.

## **Sharing innovative engineering experience - Call for innovation stories**

was initiated by CEIT in November 2019. Innovation is one of the crucial drivers for the development of many aspects of modern society, in particular engineering that depends on new ideas and technologies. A serial of innovation stories were collected to capture and share innovative thoughts and activities around the globe.

## **Increasing public recognition of innovative technologies - Online Open Course on Innovative Technologies for Sustainable Development**

was initiated by CEIT in June 2021. This serial of online open courses aiming to popularize the basic knowledge of innovative technologies to the public and introduce the key role of innovative technologies in promoting sustainable development. 3 specialists from Malaysia, Bangladesh and China gave 4 recorded courses.

**Expanding CEIT's Influence in Engineering** – International Conferences co-organized by CEIT, including: World Robot Conference (2019), the second World Forum on Science and Technology Development (2020), China Intelligent Industry Forum (2020) and China 5G Application Innovation Conference (2020 & 2021).

**Enhancing CEIT's Capacity Building** – CEIT secretariat regularly renews its membership, organizes working meetings, disseminates newsletters to establish a good communication mechanism with members and enhance capacity building.

**Contributing to WFEO activities** – CEIT actively participates in and contributes to WFEO activities, including the preparation for World Engineering Day 2020 & 2021, operating the WED Website and social media account, drafting of the UNESCO Engineering Report, assisting in updating the WFEO Code of Ethics



## Key achievements

### Big Data and AI Principles in Engineering

CEIT sets up the Big Data and AI Working Group with experts from industry, academia and government to draft the principles for a wide further discussion in engineering society. With 3 rounds of survey in a year, 40+ organizations and experts from around the world provided their feedbacks to the drafted principles through the online survey platform or via email. The seven principles were later released by WFEO for the World Engineering Day in 2020 and 2021 to promote responsible conduct of big data and AI application and innovation in engineering.

### Engineering Innovations for Sustainable Development Best Practices

This casebook contains 21 innovative practice cases based on 17 UN 2030 Sustainable Development Goals from the engineering community. It shows the practical achievements of engineering innovations in promoting sustainable development so as to enhance exchanges and cooperation, and promote excellent practices and solutions. It also aims to inspire colleagues in the engineering industry to think about their doings from the perspective of sustainable development. This casebook was exhibited on the China International Fair for Trade in Services 2021, and CEIT was responsible for compiling the content.



UN WFEO Call for Innovations - Youth Creativity for Sustainable Transport, Beijing, November 2020



Session on Innovative Technologies at WEC 2019, Melbourne, November 2019



Webinar on Engineering in Poverty Alleviation, Online, March 2021



Webinar on A Sustainable Future- Young Engineers and the Fourth Industrial Revolution, Beijing, September 2020



CEIT Annual Meeting, Melbourne, November 2019





CIC is dedicated to the field of 'Information and Communication' and has the responsibility to leverage the Information and Communication Technology Paradigm. The CIC fulfills the tasks allocated by WFE0 in accordance with the United Nation's Sustainable Development Goals. The focus areas are related to SDG9 and SDG11. CIC is presently hosted by the Institution of Engineers India.

**S.S. Rathore,**  
**Acting Chair of CIC (TBC),**  
**Institution of Engineers India**

The CIC has planned that both the External and Internal Objectives as set out in the WFE0 Strategic Plan (2019-2023) would be addressed through the Committee's objectives.

Essentially the work of the CIC is in propagating achievement of the SDGs. Specifically, the particular SDGs relevant in the context of CIC are:

- SDG 9 - Industry, Innovation and Infrastructure (Industry 4.0)
- SDG 11 - Sustainable Cities and Communities

The ongoing pandemic has led CIC to reorient plans and planned to hold programs virtually until the situation improves. The advantage of using digital platforms for conducting various events is the ability to reach out to large number of engineers spanning geographic boundaries and this is being given due impetus.

The CIC strives to spread awareness in different areas on the significance of technological applications in developing sustainable cities and habitats. Also, the significance of innovations, specially in the context of developing countries in addressing local challenges, is sought to be highlighted.



## SUSTAINABLE DEVELOPMENT GOALS

**9 INDUSTRY, INNOVATION AND INFRASTRUCTURE**



A Monograph titled "Digital Transformation - Industry 4.0 Paradigm" has been published and widely disseminated. The monograph lucidly brings out the various components of Industry 4.0 and applications in various domains of engineering.

The Webinars organized by the CIC had speakers highlighting technological advances specially in the digital space. Also, the subchapter titled "Engineering and Big Data" for the Second UNESCO Engineering Report was prepared by the CIC.

**11 SUSTAINABLE CITIES AND COMMUNITIES**



A holistic presentation - "Smart Technologies-Adoption of Smart Cities" was prepared on the occasion of World Engineering Day 2020. This is case study based with focus on technologies for development of smart cities in the context of developing countries. The CIC prepared a sub Chapter for the Second UNESCO Engineering Report titled "Engineering for Smart Cities".



**World Federation of Engineering Organizations**  
**Fédération Mondiale des Organisations d'Ingénieurs** **WFE0-CIC**  
**Committee on Information and Communication (CIC)**  
Hosted by **the Institution of Engineers (India) - Qatar Chapter**

**Satellite Applications in the post Pandemic world**

**Chief Guest:**  
**Dr. Narendra Singh PILL**  
President, The Institution of Engineers (India)

**Introduction:**  
**Dr. TM Rama Raja PILL**  
Chairman - WFE0-CIC, Immediate Past President, The Institution of Engineers (India)

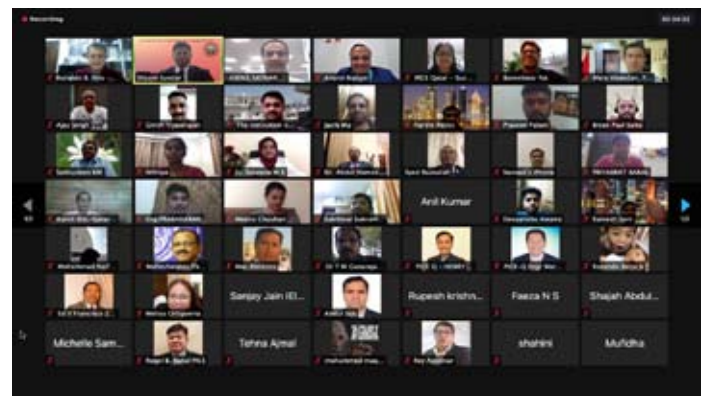
**Key note Speaker:**  
**Dr. Mylswamy Anandakumar** - (Moon Man of India)  
Program Director - for the project of CHAKRAVARTI & MANUJAKUMAR, Vice President, State Council for Science and Technology (INMIST), Chairman, Board of Governors, NERF - India

**Guest of Honour:**  
**Dr. Ahmed Jassem Al Jaleel**  
President, Arab Engineers Forum, Former President, Qatar Society of Engineers

**Welcome Address:**  
**Dr. Abdul Sathar PILL**  
Chairman, The Institution of Engineers (India), Qatar Chapter

**Guest of Honour:**  
**Mr. Ramy Jumeir**  
President / Executive Director, QIC in partnership with Liverpool John Moores University

WFE0-CIC Technical WEBINAR on 12<sup>th</sup> Nov at 6:00-7:30 PM (Gastime)  
Zoom: Meeting ID: 968 2653 8144 Passcode: IEIQatar



Webinar in Qatar with India's Ambassador to the UAE, January 2021

Webinar organized in Qatar, January 2021

## Key achievements

### Publication

Published a Monograph entitled "Digital Transformation – Industry 4.0 Paradigm" released in the presence of Prof Gong Ke, President WFEO at the Indian Engineering Congress held in Hyderabad in December 2019.

### Presentation: World Engineering Day 2020

A presentation on "Smart Technologies-Adoption of Smart Cities" was prepared which was to be presented at the World Engineering Day, by IEL, in Paris in March 20. The event was cancelled due to the pandemic. This presentation is on the WFEO Website.

### Second UNESCO Engineering Report: Inputs by CIC

The CIC prepared two sub-Chapters for the Second UNESCO Engineering Report titled "Engineering for Sustainable Development". The two subchapters were "Engineering and Big Data" and "Engineering for Smart Cities".

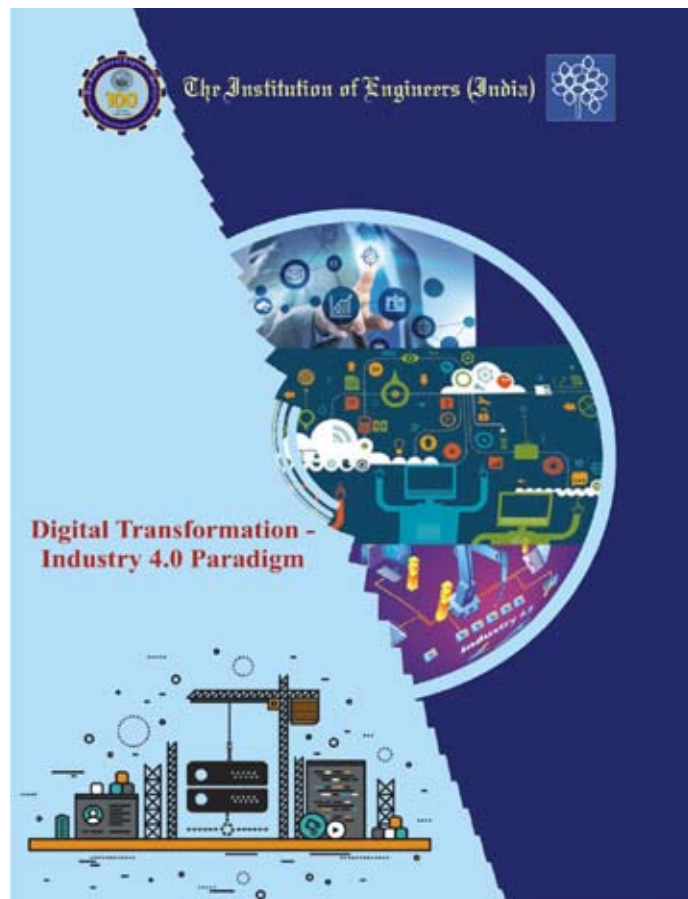
### Webinars

A Webinar titled "Engineering Challenges in Gulf Countries" was held on 22 January 2021. The event flagged issues connected with engineering projects post-pandemic in the Gulf Region. This was conducted in collaboration with Kuwait Society of Engineers.

A Webinar on the subject "Satellite Applications in the Post Pandemic World" was organized by the CIC on 12 November 2020.

A Webinar entitled "Engineering for a Healthy Planet" was held on 13 March 2021. The program had eminent speakers and included a Session on the contribution of women in leadership roles. Speakers were from India, Qatar and Nepal.

The Webinars were widely attended by engineering students, practitioners and academia.



Cover of the monograph "Digital Transformation - Industry 4.0 Paradigm"



Monograph "Digital Transformation - Industry 4.0 Paradigm" released By Prof Gong Ke, WFEO President



CAC strongly believes that the foundation to achieve SDG 16 is the effective emphasis on advocacy for public and private entities to holistically comply to the family of standards ISO 9000 (Quality management Systems), ISO 14000 (Environmental Management Systems), ISO 31000 (Risks Management Systems), ISO 37000 (Governance of Organizations) and ISO 45000 (Occupational Health and Safety Management Systems) for proper Equity, Diversity and Inclusiveness.

**Papias Kazawadi,**  
Chair of CAC,  
Institution of Engineers Rwanda



## SUSTAINABLE DEVELOPMENT GOALS

**16** PEACE, JUSTICE  
AND STRONG  
INSTITUTIONS



CAC organised activities that included individual networking meetings for knowledge sharing, advocacy webinars and publication of an anti-corruption statement on World Anti-Corruption Day. All focused on detection and prevention of corruption in engineering practices through promotion of integrity and strong institutions for

the good of mankind.

**17** PARTNERSHIPS  
FOR THE GOALS



The power of partnerships in the quest to attain SDGs has been demonstrated by CAC through individual and institutional collaborations in the past two years. The Committee has built strong partnerships with regional and global players and action plans are in place to guide the activities in coming years.

### Enhanced collaborations between local, regional and international Anti-Corruption players for Sustainable Partnership

The Institution of Engineers Rwanda (IER) signed Memorandums of Understanding (MoUs) with Global Infrastructure Anti-Corruption Centre (GIACC) based in the United Kingdom and Transparency International Rwanda (TIR). GIACC is a globally recognised think tank with a comprehensive collection of training resources that are accessible free of charge.

### Advocacy for enhancement of Integrity Pacts in Infrastructure Projects as a game changer to Eradicate Corruption

In 2020, the Rwanda Public Procurement Authority (RPPA), TIR and IER hosted dialogue sessions in Kinyarwanda, which were broadcasted on Rwanda national television. They generated public interest and interaction.

On Sunday 7 May 2021, TIR and IER co-hosted a live television show to discuss Integrity Pacts in Infrastructure Projects. Pertinent issues of corruption in the infrastructure sector were discussed.

### Anti-Corruption Awareness campaigns, Education and Training of Stakeholders

On the 11 July 2020, WFEO and International Organisation for Standardization (ISO) jointly hosted a webinar to discuss the Draft International Standard ISO 37000. The meeting was attended by a diverse global audience.

On the 27 August 2020, IER hosted a knowledge sharing webinar titled "Detection and Prevention of Corruption in Infrastructure Projects". A panel of experts shared best practice on the promotion of integrity in infrastructure to an audience drawn from across Africa. One of the recommendations of this webinar to the WFEO CAC – GIACC alliance was to develop anti-corruption module to be made compulsory for engineering syllabus for engineers, technologists and technicians.

### Anti-Corruption Publications (webinars, newsletters, magazines)

To mark International Anti-Corruption Day on 9 December 2020, Chairperson of the CAC issued an Anti – Corruption Statement calling for all WFEO members to build new guidelines that will serve as a reference framework for engineers operating in the infrastructure sector. The message was published in The New Times and on WFEO and FAEO websites.

On March 2021, IER and CAC hosted a webinar entitled "Engineering, Integrity and Innovation for a Healthy Planet". It was held to celebrate the second World Engineering Day for Sustainable Development which is marked annually on the 4th of March. Among the speakers were the UNESCO's ADG for Natural Sciences and African Union's Director of Commission for Human Resources, Science & Technology Department (HRST) and it was attended by participants from the host Rwanda, the region and abroad.

The IER in collaboration with the WFEO's Policy Implementation Committee on Anti-Corruption (CAC) organized Essay and Poem Competition for students at Gashora Girls Academy for Science and Technology. The aim was to raise awareness of engineering as a career option for girls. The first three winners were awarded prizes by IER.



## Key achievements

Productive alliance between WFEO CAC and Global Infrastructure Anti-Corruption Centre (GIACC) by among others supporting CAC leadership, provide training materials on corruption detection and prevention, access to Commonwealth Anti-Corruption Benchmarks containing best practice anti-corruption measures.

WFEO has a link to GIACC Resource Centre, which provides, free of charge, on-line information, advice and tools designed to help organizations and individuals in the public and private sector understand, prevent and deal with corruption.

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

International Organization for Standardization  
Organisation internationale de normalisation  
Международная организация по стандартизации

WEBINAR ON DRAFT INTERNATIONAL STANDARD ISO37000  
– GOVERNANCE OF ORGANISATIONS

Moderator: Papias Kazawadi Dedeki  
Chair, Committee on Anti-Corruption  
WFEO

Speaker: Dr. Marlene Kanga  
WFEO President 2017-2019

11 July, 12:00 PM. UTC  
(1:00 PM, Paris Time)

10 PM: LIVE Q&A SESSION

8: 8:00 AM - 9:00 AM: REGISTRATION  
9: 9:00 AM - 10:00 AM: OPENING CEREMONY  
10: 10:00 AM - 11:00 AM: WEBINAR  
11: 11:00 AM - 12:00 PM: Q&A SESSION

WFEO Webinar on draft international standard ISO 37000 – Governance of organisations, 11 July 2020



### CHAIRMAN'S STATEMENT ON 9 DECEMBER 2020 - INTERNATIONAL ANTI-CORRUPTION DAY

Esteemed members and the community at large,

Today is International Anti-Corruption Day, an important event on our calendar. We are marking it under our 2020 theme which is, "Enhanced collaborations between local, regional and international Anti-Corruption players for Sustainable Partnership."

In making this statement, I acknowledge the unprecedented impact on economic and societal systems brought about by the onset of the global COVID-19 pandemic. At regional and national levels this has affected the pace, scope and mode of the Committee on Anti-Corruption (CAC) strategy roll out.

Since November 2019, the Institution of Engineers Rwanda (IER) has been the host of the CAC, and committee members were appointed to fulfil the committee's mandate. Subsequently, WFEO hosted a webinar on 11 July 2020 to discuss the Draft International Standard ISO37000. This was followed by the webinar on "Detection and Prevention of Corruption in Infrastructure Projects" on 27 August that was done in collaboration with Global Infrastructure Anti-Corruption Centre (GIACC) of UK. The WFEO CAC's annual review meeting was also virtually held on 14 October, followed by the Executive Council meeting from 29 to 30 October.

Looking ahead, it is anticipated that 2021 will bring increased momentum as we adopt a new theme on "Advocacy for enhancement of Integrity Pacts in Infrastructure Projects as a game changer to Eradicate Corruption." In conclusion, I appeal all WFEO National and International members to cooperate with us in building new guidelines that will serve as a reference framework for engineers operating in this sector.

Thank you,

Eng. KAZAWADI Papias Dedeki  
Chairman, WFEO CAC

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

WORLD ENGINEERING DAY  
FOR SUSTAINABLE DEVELOPMENT

IN COLLABORATION WITH  
WFEO Committee on Anti - Corruption

WEBINAR ON:  
ENGINEERING, INTEGRITY AND INNOVATION  
FOR A HEALTHY PLANET

**Tendai MURAHWA**  
Sustainability Strategist  
Moderator

**Eng. Papias Dedeki KAZAWADI**  
FAED President Elect  
Chair WFEO - CAC

**Dr. Muhemba GUERDAGO**  
Director AG/Commissioner NRC

**Dr. Sharmila RAJES-BEDKUPILIP**  
UNESCO Assistant  
Director General for the Natural Sciences

**Mr. Apollinaire MUKIGANYI**  
Executive Director  
Transparency International Rwanda

**Neill STARSBURY**  
Co-Founder & Director  
Global Infrastructure Anti-Corruption Centre

**Academician Dato Dr. Dr. Lee Yee CHIEWENG**  
UN Board Member, Commissioner  
Bureau of Anti-Corruption & Transparency

**Eng. Martin MANUJWA**  
AFD at UNCTAD, FICD International Panel  
President, Panel Chair WFEO CAC

THURSDAY  
11 MARCH 2021  
11:00AM - 1:00PM  
(CAT) KIGALI

TO REGISTER FOR PARTICIPATION  
FOLLOW THE LINK BELOW:  
[https://us02web.zoom.us/join/register/WN\\_TeF5W5bQKtRUWu7R836dA](https://us02web.zoom.us/join/register/WN_TeF5W5bQKtRUWu7R836dA)

16 PM: Q&A SESSION  
17 PM: DINNER

TRANSPARENCY INTERNATIONAL RWANDA

GIACC

African Union

World Engineering Day Webinar Flyer, March 2021

CAC Chairman's Statement on 9 December 2020, International Anti Corruption Day



The WIE Committee is a Policy Implementation Committee of WFEO that work collaboratively to empower, inspire, encourage, and share the achievements of women in engineering and technology around the world. We believe that equality, diversity and inclusion in the engineering and aligned sectors is crucial to address the challenges that exists in the world.

"Only by the realization of a truly inclusive and diverse engineering sector, can the world enjoy the creativity and innovation that comes from different lenses and perspectives, and subsequently achieve sustainable economies that work for all and leave no-one behind".

**Yetunde Holloway,**  
Chair of WIE,  
Nigerian Society of Engineers

The Committee on Women in Engineering has overarching themes as follows:

- Theme 1: Engineering Workforce Capacity building- to increase diversity and inclusivity in the future skills pipeline
- Theme 2: Engineering Workforce Capacity building- to encourage female engineering retention and leadership
- Theme 3: Collection of Engineering Strategic Indicators
- Theme 4: Working in Partnership to address the Sustainable Development Goals, with a particular emphasis on Goal 5-Gender Equality, and its relationship to the other Goals in particular SDG13 and 17

WIE joined the world to contribute their quota in the fight against COVID-19. In Ghana, efforts were made in re-engineering markets for the COVID-19 period and beyond.

On 5 and 8 March 2021, WFEO hosted 2 webinars on "Rising to the Top Volume II" to recognize a group of inspirational female leaders in engineering share their compelling journeys in engineering, published by the International Federation of Engineering Education Societies (IFEES) in partnership with UNESCO.

On 24 June 2021, WIE held a Virtual Roundtable and Interactive Session on strategic themes to celebrate International Women in Engineering Day (INWED 2021). The session had over 41 participants hear the theme leads give a presentation of their programmes, activities and focus. The opening remarks was given by the Chair of the Committee, Engr. Yetunde Holloway who also chaired the session. The closing remarks were made by Rovani Sigmoney - UNESCO Engineering Programme Specialist.



SUSTAINABLE  
DEVELOPMENT GOALS

5

GENDER  
EQUALITY



On 30 May 2020, the WIE Committee held a panel discussion on the theme, Responding to COVID-19, Survival Initiatives & Attributes of Resilient Female engineers Working in partnership to address the SDGs with a particular emphasis on Goal 5-Gender equality and its relationship to the other goals

in particular SDG 13 and 17.

In August 2020, the 19th Gender Summit took place virtually and in Korea to mainstream gender in science and technology and to address the SDGs and the WIE Committee was represented by the deputy Chair, Dawn Bonfield.

On 20 March 2021, WIE in collaboration with the International Network of Women Engineers and Scientists (INWES) and the International Science Council (ISC) held the CSW65 parallel event "Empowering Women in STEM is Essential for Achieving the UN SDGs".

The WIE Committee collaborated with Federation of African Engineering Organizations (FAEO) to host the 1st Virtual Symposium and 3rd African Women Engineers Summit on 4 December 2020. The symposium was aimed at enhancing the understanding of 'Gender Equality' SDG5 with respect to the practice of engineering in Africa and the development of collaborations, strategies and policies for the accelerated development of the Girl-Child.

17

PARTNERSHIPS  
FOR THE GOALS



On 6 March 2021, The Women in Engineering collaboratively held a webinar with WFEO -CEIT Committee on the theme "Engineering in Poverty Alleviation" with WIE's focus on addressing the issues of Poverty and Gender Equality.

Partnerships in the following areas:

- We have signed up to the UN Women Action Coalition on Technology and Innovation for Gender Equality.
- We have proposed a panel session for COP26 in Glasgow, in collaboration with the UK Women's Engineering Society.
- We have contributed to the chapter in the UNESCO Engineering Report on Sustainable Development, writing the Diversity and Inclusion, and the Women in Engineering Chapters, and are now working with UNESCO on progressing the recommendations of this report.
- We also contributed to COP25 and the Climate Change Declaration.



## Key achievements

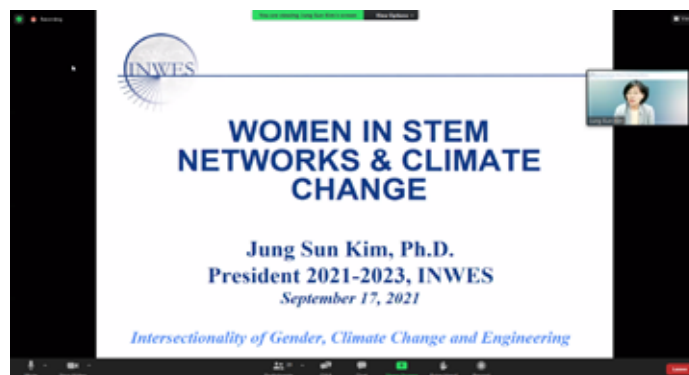
- Launched the first edition of their activities magazine in 2019
- We have written and confirmed our new strategic plan
- Joined the world to celebrate International Women's Day 2019, 2020 and 2021 celebrations
- Participated in various activities to mark the celebration of World Engineering Day 2021
- The Committee participated in UN multistakeholder meeting held on 21 July, 2020 on the theme "Accelerating the Realization of Gender Equality and the Empowerment of all Women and Girls"
- Webinar held on responding to COVID-19, Survival Initiatives & attributes of Resilient female engineer 30 May 2020 to address the issues around the theme,
- Held their 2020 Meeting virtually on 19 October 2020
- Rising to the Top Volume II - Global Women Engineering Leaders share their journeys to professional success on 5 and 8 March 2021.
- Publication of 2 Newsletters in 2019, 3 Newsletters in 2020 and 1 Newsletter in the first quarter of 2021.
- Pilot scheme of the Gender ScoreCard launched on 14 June 2021, which speaks to the Collection of Engineering disaggregated strategic indicators
- A Commitment to Equity, Diversity & Inclusion – June 2021
- Egalite edi declaration: Charter document declaration on diversity, Inclusivity and equality

WIE hosted a webinar in partnership with INWES, ISC and UN University to discuss women and climate change on 17 September 2021. This partnership event brought together the voices of women in STEM from more than 100 nations.

INWES President Prof Dr. Jung Sun Kim and Prof. Dr Nidhi Nagabhatla, Senior Fellow and Cluster Coordinator – Climate Change and Natural Resources, United Nations University, Belgium, represented ISC.



INWES President Prof Dr Jung Sun Kim (2nd row, 2nd left) and Prof Dr Nidhi Nagabhatla (3rd row, right), with other WFEQ leaders and speakers at the webinar on Women and Climate Change, 17 September 2021



INWES President Prof Dr Jung Sun Kim presenting at the webinar on Women and Climate Change, 17 September 2021



WIE hosted two webinars in collaboration with INWES and ISC on women and climate change on 17 September 2021 and 12 October 2021.



Webinar on Diversity and Inclusion with WIE and INWES held on 31 July 2020



Yetunde Holloway, Chair of WIE, at a Session during International Women's Day 2020 Celebration in Nigeria





The WFE0 committee on Young Engineers / Future Leaders (YEFL) is a motivated team of young engineers who work voluntarily to make (YEFL) acknowledged and celebrated as the global leader for the young voices of the Engineering profession. The work of the (YEFL) is aimed at enabling a sustainable ecosystem that provides support, resources and a platform for young engineers in the WFE0 community, highlighting the role of young engineers worldwide in achieving the UN Sustainable Development Goals.

**Firas N Bou Diab,  
Chair of YEFL,  
Federation of Lebanese Engineers**

## World Engineering Day 2020 – YEFL Celebrating the Achievements of Young Engineers Around the World

The goal of the competition was to highlight the work of young engineers and their engineering achievements in advancing the UN SDGs. More than 400 young engineers from more than 70 countries, including some from the leading engineering universities of the world, showcased their projects to advance sustainable development through engineering as part of this competition aligned with UNESCO World Engineering Day.

The winner was Aida Rafat, Imperial College London UK, with her project for reducing textile waste and reducing pollution from textile dyeing technologies – SDG12.

## World Engineering Day 2020: Engineering Heroes Mini-Series

YEFL Chair Firas Bou Diab speaking on SDG 8 – “Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all”.

## World Engineering Day 2021 – YEFL Video Campaign: Young Engineers Leading the Way

YEFL invited young engineers from around the World to submit a video to showcase contributions that young engineers are making towards a more sustainable, resilient, and inclusive world. More than 40 young engineers from more than 20 countries, showcased their videos that highlighted the important role that young engineers play towards accelerating action towards sustainable development. All videos answered one of the following three questions:

1. What is the importance of engineering in working towards a more sustainable world?
2. What advice do you have for young engineers interested in making a positive impact in their community?
3. Share an example of how young engineers are already contributing to sustainable development.

The winner was Roshan Teeluck, from The Institution of Engineers Mauritius (IEM) and the runner up was Ludvig Vraadal from Association of Nordic Engineers (ANE).



**SUSTAINABLE  
DEVELOPMENT GOALS**

### 6 CLEAN WATER AND SANITATION



Young Engineers/Future Leaders Committee and European Young Engineers, organized a webinar on “Water Reuse for a Sustainable Industry: Challenges and Opportunities in a Circular Economy”. The aim of this panel discussion was to define any remaining existing barriers between current politics, industry, and academia regarding the

promotion of water reuse in industry, to create a sound cohesion between the technical and natural world. Through webinars like this, we aim to bridge the existing gap between politics and engineering.

### 13 CLIMATE ACTION



Young Engineers/Future Leaders Committee set-up a working group on SDG 13 to include and deploy young engineers' capacity in the Global Climate Emergency work. This working group aims to streamline the national young engineers' initiatives on SDG 13 so they

contribute to the global UN targets. This will be achieved by preparing the national young engineers' strategies which are aligned to the UN initiatives and addresses the national climate change challenges including those relevant to the resource efficiency.

## World Engineering Day 2021 - Launch of Engineering the Future of Mauritius and the World - Engineering and the UN Sustainable Development Goals in a Small Island Developing State

The Journal of the Institution of Engineers Mauritius (IEM), March 2021 Edition, “Engineering the Future of Mauritius and the World”, was released at a gala event on World Engineering Day, 4th March 2021. This publication showcases the strategies and work of engineers to address sustainable development in the context of the Small Island Developing States (SIDS).

Mauritius is a small and beautiful island state that is facing many of the issues of SIDS around the world. The Chair of the WFE0 Young Engineers/Future Leaders Committee, Eng. Firas Bou Diab contributed to the Journal with the article entitled “The Next-generation Mauritius: Smart, Resilient and Sustainable”.

## YEFL Webinar Series “Engineering the Future”

Engineering plays an indispensable role in designing resilient and sustainable societies. The COVID-19 pandemic has exposed inequalities and vulnerabilities across social, economic, and environmental spheres. Ensuring a rapid recovery, while laying down the foundation for more resilient systems is a precondition to achieving the 2030 Agenda, including the SDGs.

The webinar series seek to highlight the role of engineering design and systems-based approaches in risk identification, mitigation, and reduction, as well as recovery. It will highlight the key challenges to address and opportunities for better engineering systems across multiple sectors. The sessions will also discuss how different levers - technology, finance, governance, collective action - can promote a shift towards more sustainable social, economic, and environmental systems.

### China Beijing International High-Tech Expo & WFE0 webinar "A Sustainable Future: Young Engineers and 4IR"

The WFE0 Committee on Engineering for Innovative Technologies (CEIT) and YEFL organized the webinar "A Sustainable Future: Young Engineers and the Fourth Industrial Revolution (4IR)" on 18 September 2020, during the 23rd China Beijing International High-Tech Expo (CHITEC).

Young Engineers have the ambition and desire for changing the world and are always contributing in proposing innovative technological solutions, driving the emerging 4IR. They are mobilizing to advance the Sustainable Development Goals to improve the lives of people and the health of the planet.

### Collaboration with European Young Engineers (EYE)

The webinar "Water Reuse for a Sustainable Industry - Challenges and Opportunities in a Circular Economy" defined the barriers existing between politics, industry and academia in regards to the promotion of water reuse in industry, to create a sound cohesion between the technical and natural world. The webinar promoted SDG 6 and Young Engineers.

### Collaboration with FIDIC Future Leaders

FIDIC Future Leaders is the group of young professionals of the International Federation of Consulting Engineers (FIDIC). Participation in the Future Leaders Management Certificate (FLMC) programme to strengthen the business expertise of young engineers and other professionals working in the field of consulting engineering.

### Second UNESCO Engineering Report, "Engineering for Sustainable Development – Delivering on the Sustainable Development Goals"

YEFL Chair Firas Bou Diab participated in the Roundtable on the Engineering Report, featuring young engineers from every region of the world, at a high-level virtual event hosted by UNESCO on 4th March 2021. This event showcased the leadership and contribution of Engineers from around the world to Sustainable Development.

### WFE0 – YEFL HLPF 2021 Side Event: Deploying Global Youth Capacity in UN Policy and Engineering for SDG 13

WFE0 and its Committee on Young Engineers / Future Leaders organized the HLPF 2021 side event "Deploying Global Youth Capacity in UN Policy and Engineering for SDG 13" on 9 July 2021, as a side event of the 2021 edition of the High-level Political Forum. The crises of climate breakdown are the most serious issues of our time. Our major infrastructure systems of transport, energy, water, waste, telecommunications and flood defenses play a major part, accounting for a vast portion of energy-related carbon dioxide emissions whilst also having

a significant impact on our natural habitats. WFE0 continues to raise awareness of the climate emergency and the urgent need for action amongst WFE0 National Member Engineering Organizations and WFE0 Partners, all stakeholders within the National Members and with Governments. The event aimed for an engineering community where a diverse and inclusive membership can work collaboratively towards innovative climate mitigation strategies, engaging women and young engineers in particular to combat climate change.

### Key achievements

Joint statement by WFE0, United Nations Secretary General Youth Advisors on Climate Action, the Youth Science-Policy Interface Platform (SPI) of the Major Group for Children and Youth, at the 2021 High-Level Political Forum Side Event "Deploying Global Youth Capacity in UN Policy and Engineering for SDG 13".



The WFE0 Engineering for Innovative Technologies Committee and the Young Engineers / Future Leaders Committee organized the webinar "A Sustainable Future: Young Engineers and the Fourth Industrial Revolution (4IR)" on the 18th September 2020, during the 23rd China Beijing International High-Tech Expo (CHITEC).



YEFL Webinar Series "Engineering the Future"



WURC leads and coordinates with the UN and its various agencies. The committee co-chairs the UN Scientific and Technological Major Group.

The primary focus of the committee is to communicate to UN bodies including member states and other stake holders the role of engineering and engineers in implementing the SDG's and helping meet the 2030 agenda.

**K. N. Gunalan,  
Chair of WURC,  
American Society of Civil Engineers**

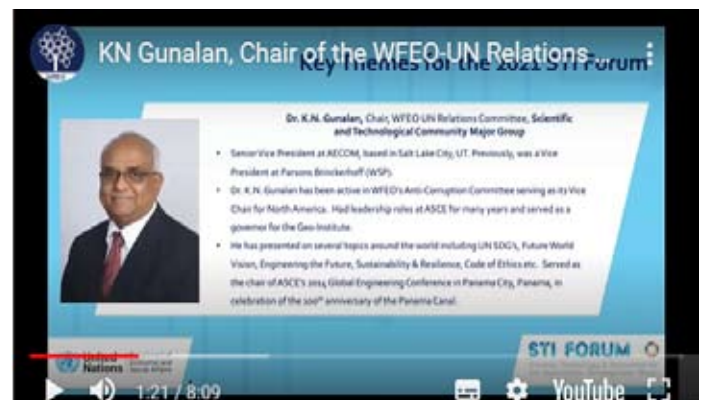
The committee has been focusing on engaging and highlighting the work of the engineering community in supporting the accomplishment of the SDG's and meeting the UN 2030 agenda. The committee has been coordinating with our strategic partner International Science Council (ISC) in providing both verbal and written input to the ECOSOC and HLPF process, Ministerial Declaration in addition to coordinating and offering subject matter experts to speak on behalf of the engineering community.

The committee has engaged in other partnerships namely with the Stimson Center – Alliance for Climate Resilient Earth; International Coalition for Sustainable Infrastructure (through the American Society of Civil Engineers – ASCE) which includes Institute of Civil Engineers (ICE), Global Covenant of Mayors, Resilient Shift/ Resilient First and private entity namely WSP.

The committee has signed on to a Declaration authored by the Stimson Center titled "Declaration for a Climate Resilient and Sustainable Infrastructure" that is to be signed by major financial institutions, member states, agencies, professional societies, and those involved in the industry.

## Key achievements

- Dr. William Kelly and Pan Li contributed to Chapter 3 of UNDESA Project - AI Resource Guide
- Dr. William Kelly provided input to IATT Report for Science Technology and Innovation (STI) Forum 2021
- Dr. William Kelly contributed to the Science-policy brief "Engineering Standards for a Changing Climate"
- The Committee (Dr. William Kelly and Dr. K. N. Gunalan) has been actively engaged in the review of ECOSOC and HLPF process along with the Major Group of Stakeholders (MGoS)
- The Committee organized a virtual webinar to commemorate World Engineering Day March 4, 2021 with a press release (that was endorsed by major professional societies such as ACEC, CSCE, ASCE, UPADI, WFEO) ahead of the panel discussion on "Roadmap to the 2030 UN Sustainable Development Goals – Advancing Sustainable and Climate Resilient Infrastructure" - Recording
- Provided feedback to ECOSOC on STI Forum agenda on 6 April 2021.
- The Committee organized a very successful virtual side event during the STI Forum on 4 May 4 2021 which attracted over 600 registrants
- Dr. Marlene Kanga represented the MGoS on SDG 8 during the Thematic Expert Group Meetings between 17 and 24 May 2021
- Mr. Chuck Hookham spoke on energy during the Global Multi-stakeholder Dialogue at the UN Ministerial Thematic Forum on June 24 2021



Dr K N Gunalan presents at the United Nations Stakeholder Briefing at the Science, Technology and Innovation (STI) Forum, May 2021.

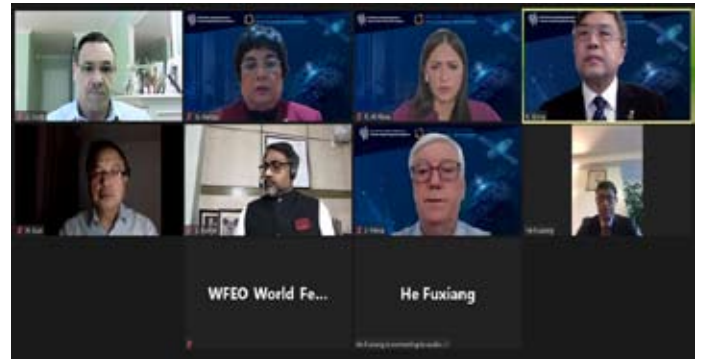




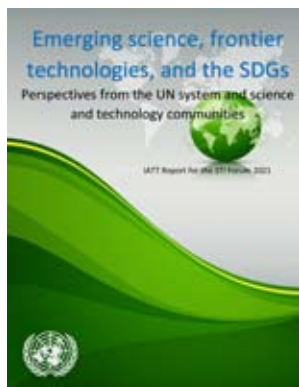
WFEO, representing the Scientific and Technological Major Group at the United Nations, hosted a side event of the 2020 UN High-Level Political Forum virtually with the theme "How the Lever of Science and Technology Can Be Used in Peri-urban and Urban Environments to Advance Sustainable Development: The Case of Implementing Geospatial Engineering" on 9 July 2020. This side event was supported by the Permanent Mission of the People's Republic of China to the UN and demonstrated how advanced technologies are important in advancing the UN Sustainable Development Goals.



WFEO President Gong Ke and WFEO Immediate Past President Dr Marlene Kanga with other leaders from WFEO and International Science Council, speak at the WFEO Side Event at the United Nations Science Technology and Innovation Forum, 4th May 2021.



Speakers at the online webinar hosted by WFEO at the UN High Level Political Forum, July 2020.



Speakers at the WFEO side event on the 2021 UN HLPF entitled "Deploying Global Youth Capacity in UN Policy and Engineering for SDG 13" on 9 July 2021.



The purpose of the WGIRC is to provide guidance for the development of national infrastructure report cards with a view to producing a global infrastructure report. The intention is to correlate the status of the United Nations Sustainable Development Goals with the state of infrastructure in the nine UN Regions across the world.

**Martin Van Veelen,**  
Chair of WGIRC,  
Federation of African Engineering Organizations

Infrastructure is the assets that society develops, owns and utilizes in order to improve the standard of living and the quality of life. It enables economic development and keeps society healthy. Infrastructure can only be an asset if it is maintained in optimum working condition. If it is not worthwhile to maintain, it was not worthwhile in the first instance to allocate resources to establish it.

This does not refer to infrastructure that has reached the end of its economic or functional life and is deliberately decommissioned. Functional infrastructure is the foundation for achieving the UN SDG goals. Without proper schools (structures) it is not possible to achieve SDG 4; without taps that actually have water it is not possible to achieve SDG 6 and so on.

The Working Group started on a project to produce an infrastructure report for Africa South of the Sahara funded by the Global Challenges Research Fund (GCRF) Africa Catalyst Scheme through the Royal Academy of Engineers in London. The project covered the following aspects:

- Develop and agree on the format of the work to be done. This was done at a work session that was held in Abuja during January 2020 which was attended by representatives of all participating countries (except Rwanda who joined after this event).
- Provide training to the participating countries regarding the development of an infrastructure report. Training sessions were organized and held in Kenya, the Democratic Republic of Congo, Zimbabwe and Rwanda. The training sessions were well attended, ranging from 30 attendees to more than 80 per session. Unfortunately the COVID 19 lockdown interrupted the training and it was only completed in December 2020.
- Provide follow-up support with the collection of data and the production of country specific reports. Planning sessions were held in Kenya, the Democratic Republic of Congo and Rwanda during April 2021. These sessions were focused on the core team in each country and were typically attended by about five people.
- Produce reports for the individual countries based on available data and information. Infrastructure Reports were already available for Nigeria, South Africa and Ghana. Reports were produced as part of this project for Kenya, the Democratic Republic of Congo, Zimbabwe and Rwanda. The latter are first time reports.



## 6 CLEAN WATER AND SANITATION



Most of the problems with water supply in Africa are not related to a lack of infrastructure, but rather the level of service that is provided. It is not unusual to find a water supply system in rural areas that provides water only twice per week for a few hours.

## 7 AFFORDABLE AND CLEAN ENERGY



Africa produces less than 3% of the world's electricity and relies on gas, charcoal and wood. In areas where there is a formal supply of power, interruptions are frequent and sometimes long lasting. Hydropower has been affected by climate change: Without water it is not possible to generate power.

- Develop and agree on the final format of the report for Africa South of the Sahara. This work session is planned to be held in Kigali during July 2021.
- Produce the final report. This is scheduled to be completed by October 2021.

The Infrastructure Report for Africa South of the Sahara is intended to be a trial run and a model for the rest of the world.



Minister of Works closing the training in the Democratic Republic of Congo



## Key achievements

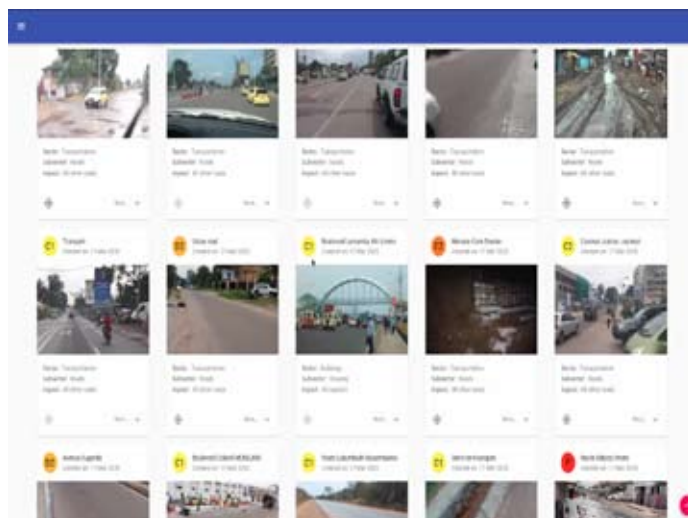
- Infrastructure reports have been produced for the first time in four countries: Zimbabwe, Democratic Republic of Congo, Kenya and Rwanda.
- A final report for Africa South of the Sahara will be available by October 2021.
- The work of this Working Group is not specific to a single UN SDG, but rather cross-cutting over most, if not all SDGs.



Training by WGIRC Chair Dr Martin Van Veelen, Abuja, January 2020



Young engineers at training in Nairobi



Demonstration of technology to capture infrastructure information, WFEO Working Group Meeting, October 2020



Attendees at WGIRC Training, Abuja, January 2020



“ Engineering must be considered as an accelerator to reach SDG 6 goals. Through WFEO and its WGoW, we are compiling the contribution of engineering to best practices and lessons learned in the various countries and regions of the world, in order to accelerate the achievement of the SDG 6 objectives through its dissemination and implementation.

**Tomas A. Sancho,**  
Chair of WGoW,  
Instituto de la Ingeniería de España

## Launch and dissemination of the First Report “Managing Floods and Droughts: Best practices and Engineering Contribution”

It has been developed a great effort in order to disseminate the first WGoW Report all around the world in several global and national meetings. This first report contains several lessons learned and best practices observed.

Engineering plays a very important role in predicting in time the natural phenomenon, the affected areas, the risks and potential damages, the definition of adaptation actions, the best evacuation options to non-flood areas or to guarantee the uses water essentials and limit damage in droughts, and to develop specific flood and drought risk management plans.

Tackling these extreme phenomena requires combining a whole series of measures, where the role of engineering in its design and application is essential and that it is also necessary to develop the different actors involved, which reinforces the need to previously implement the plans for risk management in a participatory manner, so that they are known and assumed by all the agents involved.

It must be the responsibility of the engineers to apply as soon as possible the innovations and technological advances that allow to better manage both floods and droughts, improving prevention and alert systems and their reliability, applying decision support systems, offering information on the forecasts of flows and their uncertainty, making decisions such as flooding plains in a controlled manner or using fuse evacuation channels, temporary overexploitation of aquifers to cope with droughts, water extraction or the distribution of resources available for water security in a drought context, among many others.

- COP25 Side event - Madrid, December 2019
- Revista de Obras Publicas (Public Works Journal) Spain, January 2020
- World Council of Civil Engineers (WCCE) Webinar "Best practices on drought and flood management: Engineers' contribution", 28 July 2020
- International Association for Hydro-Environment Engineering and Research (IAHR) Global Water security Seminar, 10 September 2020
- Bolivia Webinar, 30 September 2020
- WES – World Engineering Symposium, Engineers Australia, 19 November 2020



## 6 CLEAN WATER AND SANITATION



The role of engineers, while participating in water projects (product development, planning, design, project management, construction, operation, maintenance, direction and management of institutions), will certainly be pivotal for the achievement of the SDG 6 - Ensure availability and sustainable management of water and sanitation for all.

## 13 CLIMATE ACTION



Engineers offer society and the environment different measures to adapt to the climate change: providing new sources of information that facilitate knowledge for the formulation of new policies and improved decision making, and implementing infrastructures that allow the conservation and protection of water sources and the water security.

Participation in 2020 and 2021 UN-Water meetings:

- 32nd Meeting, Rome, 28 January 2020
- 33rd Virtual Meeting, 29 September 2020
- 34th Virtual Meeting, 15 to 16 March 2021
- 1st meeting of the SDG 6 Capacity Development, virtual meeting, 14 June 2021

WGoW is participating in UN-Water meetings in order to be engaged with the global movement supporting SDG 6. The main issues is now the SDG 6 Accelerating Framework and the preparation of the Annual World Water Development Report (WWDR). The 2022 WWDR is focused on “Groundwater – Making the Invisible Visible”. WCCE with IAHR put over the table Engineering contribution to SDG6 debate in the Open Space. Participants also discussed a UN General Assembly resolution calling for two high-level meetings – one in 2021 and one in 2023 – on water and sanitation issues, and options for how UN-Water could contribute to the preparations for these meetings.

## Contribution to the UNESCO Second Engineering Report 2021:

Contribution in Water issues. Co-author in chapter 4.2.1. Clean water and human health with WFEO President-Elect Jose Vieira.

## 2020-21 ACTIVITIES – Other issues

CINCA 8 - Madrid, February 2020: Water & Climate Change

Accelerating implementation of the 2030 Agenda through water, sanitation and climate action – HL Forum - 29 May 2020, co-organized by the Permanent Missions of Canada, Finland, Hungary, Japan, Kenya, Netherlands, Portugal, Singapore, Tajikistan and the Department of Economic and Social Affairs with the support of UN-Water.

WSIS The World Summit on the Information Society Forum 2020: WWTP AS Biofactories.

UN WATER- Update on the SDG 6 Global Acceleration Framework Webinar, 11 June 2020.

Innovation Challenges in Water, Spanish Technological Platform on Water, 14 January 2021.

"Civil Engineering Contributions to reach SDGs: Water challenges" Webinar, Bolivia, 30 January 2021

Water Governance - Reservoir and dams: recovering their cost, Madrid, 27 May 2021

### Key achievements

- First WGoW Report: "Managing Floods and Droughts: Best practices and Engineering Contribution" (published)
- "The role of engineers in the effort to achieve SDG 6. A White Paper" (jointly with IAHR)
- Second WGoW report: "Achieving SDG 6 (Water goals): Contribution from engineering" (pending to be approved)
- Third WGoW report: "Adaptation to climate change: water and engineering contribution" (on discussion)



WGoW Members at the Melbourne Meeting, November 2019



Tomas Sancho, Chair of the WFEO Water Working Group, presented "Floods and Drought Management" at the World Engineers Symposium, Australia, November 2020

CINCA 8 - 8th National Congress of Civil Engineering, Water & Climate Change, Madrid, February 2020.

# WFEO response to COVID-19

WFEO encouraged any initiative of solidarity between its members by setting up a portal on its website that provided relevant and reliable information, news feeds and media articles highlighting that engineering and emerging technology initiatives are answers to fight the COVID-19.

The outbreak of the COVID-19 demonstrated the globalised nature of the new and evolving challenges that humankind is facing, and the crucial role that engineers have to play, engineers are needed now more than ever! As a federation of professional engineering institutions, WFEO stands beside its members and encourages engineering initiatives to solve this crisis. The WFEO COVID-19 portal provides relevant and reliable information, news feeds and media articles highlighting that engineering and emerging technology initiatives are answers to fight the COVID-19.

## Institution of Civil Engineers – Covid-19 and the new normal for infrastructure systems – next steps



### Covid-19 and the new normal for infrastructure systems

The Institution of Civil Engineers (ICE), in partnership with the Infrastructure Client Group, have released a white paper that examines the impact of Covid-19 on the future shape of infrastructure systems in the UK. The paper considers in detail what hasn't changed as a result of Covid-19, the role of infrastructure as part of the UK's economic recovery and what changes are needed in how we deliver infrastructure.

## Ordem dos Engenheiros de Portugal – Initiatives during the COVID-19 pandemic



The Ordem dos Engenheiros de Portugal (OEP) developed a series of initiatives aimed at preventing the COVID-19 pandemic and mitigating its consequences

## Chamber of Engineers (Malta) and the Maltese engineers



The Chamber of Engineers (Malta) and the Maltese engineers responded to COVID-19 by a series of activities.

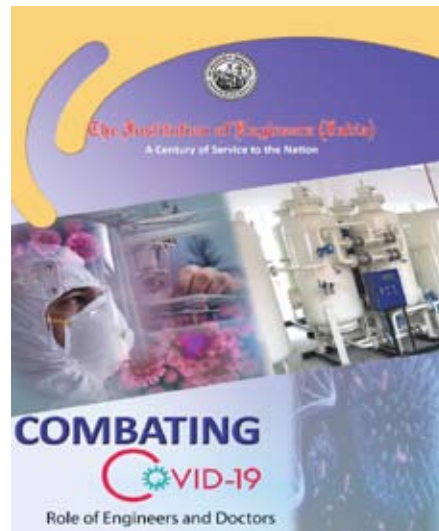
## #MakerVsVirus: TH Georg Agricola University produces face protection, door openers and much more for the Metropole Ruhr in 3D printer



The THGA, in cooperation with the German Mining Museum Bochum (DBM), has set up the "3D Printing Task Force".



The Peruvian Engineers Association, the national member of Peru at WFEO held an event on 8th June 2020 to acknowledge the work of engineering and engineers in using advanced technologies to meet the challenges of COVID-19.



The Institution of Engineers India, the national member for India at WFEO released a publication on "Combating Covid-19 – The Role of Engineers and Doctors" at the 36th Indian Engineering Congress, New Delhi, December 2021.



# Remembering those we lost

In this time of pandemic, WFEO presents its deepest regrets on the passing of four of its most dedicated engineers and would like to commemorate their work and lifelong dedication to the Engineering world.



**Reginald Vachon**

It is with great sadness that we learned on 24 December 2020 the passing of our beloved colleague Reginald I. Vachon, due to COVID-19. Reggie was an engineer, executive, and lawyer whose impressive career and accomplishments are testimony to his dedication to engineering.

He has offered distinguished service to the profession of engineering in a variety of roles at both the national and international level for more than four decades. These include: WFEO Executive Vice President and Treasurer, Chair of the WFEO UN Relations Committee (WURC), member of the Advisory Council of the WFEO Committee on Energy. He served both as the WFEO delegate at the International Atomic Energy Agency (IAEA) and as WFEO Representative to the United Nations with the UN Scientific and Technological Major Group and the U.N. High Level Political Forum (HLPF) Steering Committee on the 17 Sustainable Development Goals (SDGs).

He has been President of the American Society of Mechanical Engineers (ASME), Secretary-Treasurer and a Member of the Board of the International Nuclear Energy Academy, President of the Pan American Academy of Engineering (API), Vice President for North America for the Pan American Union of Engineering Organizations (UPADI) and Chairman of the American Association of Engineering Societies (AAES).

He was a Research & Development Engineer with E.I. DuPont, an Aerospace Engineer with Thiokol, a Design Engineer for Hayes Aircraft and an Aerospace Engineer with NASA, among his many assignments.



**Jacky Mukuka**

Mrs. Jacky Mukuka passed away on 5 May 2021. She has been a truly inspiring leader, especially for women engineers and scientists in her country Namibia and beyond.

Jacky was the President of the Namibian Society of Engineers, the Divisional Manager: Network Planning and Consultation for Namibia Roads Authority and Vice Chairperson of Association of Southern African National Roads Agencies (ASANRA) Road Network and Financing Committee.



**Mashao Lawrence**

The Engineering Council of South Africa's Sixth President Mashao Lawrence Lebea Pr Eng. passed away on 07 December 2021.

His vast experience in the engineering sector spanned over 36 years with 26 years in key management positions in both the private and public sector including his role as Chief Executive Officer of Mtema Mashao Consulting Engineers Ltd, which he founded in 2002. Engineer Lebea held a Master of Engineering from the University of Pretoria, a Bachelor of Science in Civil Engineering and a National Diploma for Technicians in Civil Engineering.



**Cyril Gamede**

The Engineering Council of South Africa's former President, Cyril Vuyani Gamede Pr. Eng. passed away on 01 August 2021.

Cyril Gamede had extensive executive and board experience in both the public and private sector. He was president of the Engineering Council of South Africa for two terms. He also served as founding president of the National Society of Black Engineers and president of the South African Institution of Mechanical Engineering. He had an executive MBA from the University of Cape Town, a BSc in Mechanical Engineering and an MSc in Industrial Engineering.

# WFE0 Awards 2020 & 2021



WFE0 is proud to promote diversity, inclusion, and gender equality in engineering.

The WFE0 GREE Women in Engineering Award was first announced during WFE0's 50th Anniversary celebration at UNESCO headquarters in Paris in March 2018, with its sponsor GREE Electric Appliances. This is the first global Award to acknowledge and give visibility to outstanding women engineers, for their professional excellence and contribution to engineering for the good of people and planet.

The WFE0 GREE Women in Engineering Award is awarded every year.

Nominations were invited for outstanding female engineers who have made significant contributions to engineering. Nominations have been submitted by an institution such as a university, an engineering institute or association, a corporate entity, or a national and international organization.

More than 40 nominations were received, the largest number of applications ever received for a WFE0 Award, demonstrating the increasing importance of the Award.

The Winners of the 2021 WFE0 GREE Women in Engineering Award, WFE0 2021 Medal of Excellence in Engineering Education and WFE0 2021 Medal of Engineering Excellence will be announced during the 2022 WFE0 General Assembly Meetings and the World Engineering Summit that will take place in Costa Rica between 4 and 11 March 2022.

## Winner



**Elvira Fortunato** is a Portuguese engineer and scientist with a top academic profile. She has a specialization in material science and has led breakthrough research in nanomaterials, microelectronics and material engineering. She is worldwide recognized as the inventor of transparent electronics and paper electronics and vice-rector of Nova University of Lisbon.

## Highly Commended laureates



**Sabah Mashaly** is an Egyptian electrical engineer with 30+ years of technical and leadership experience in the utility sector. In 2019, she was appointed as Chairwoman and Managing Director of the Egyptian Electrical Transmission Company, with 33,000 employees.



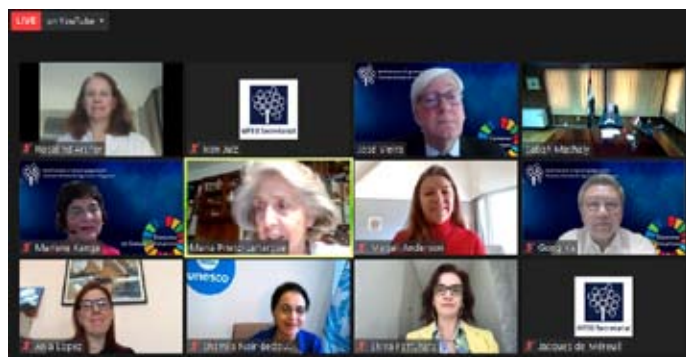
**Magali Anderson**, a French citizen, is Chief Sustainability and Innovation Officer and member of the Executive Council of the LafargeHolcim cement group, and CEO of Lafarge SA. She has a long experience of oil field engineering in various countries, mainly with the Schlumberger Group.



**Harriette Amissah-Arthur** is an experienced electrical engineer from Ghana, co-founder and partner in a consulting company. She has held important positions in national corporations and authorities in the energy sector and conducted many projects, including power plants building and management, including 18 year service at the Volta River Authority.



**Rosalind Archer** is a New Zealand reservoir engineer, an academic leader with a specialization on computational earth science, and a company director. She is the 2021 President of Engineering New Zealand.



Screenshot of the awarding ceremony of the WFE0 GREE Women in Engineering Award 2020, 8 April 2021.

# Distinguished fellows

"Distinguished fellow" is a new category created in 2019 and described as follows in WFEO's Constitution:  
"A Distinguished Fellow shall be an individual who has engineering qualifications and made an outstanding contribution to engineering."



**Prof. Dr. Jürgen Kretschmann**

Jürgen Kretschmann is full Professor and President of the TH Georg Agricola University (THGA), Bochum, Germany, a WFEO associate.

He is also an the Managing Director of DMT Society for Teaching and Education (DMT-LB) and an external Professor at RWTH Aachen University. In these respects, his role is both in Engineering Research and in Knowledge Transfer, specifically in the post-mining area. A proof of his significant work is that on 9 May 2020, the THGA was awarded the European banner by Europa-Bochum, acknowledging the commitment of the German university "in and for Europe".

Dr. Kretschmann has been long time active in WFEO Working Groups, thus highlighting the importance of international cooperation in engineering. He stands out by far to promote the Engineering Profession as a fundamental tool to achieve sustainable development and green environment in support of the UN SDGs.

The FEANI (European Federation of National Engineering Associations) community has known Dr. Kretschmann since many years in the context of his active support for the FEANI German National Monitoring Committee. He successfully advocated for a closer relationship of engineering graduates and the FEANI organization, in particular the FEANI EUR ING Professional Title. THGA is also a strong partner within the FEANI initiative "Engineers for Europe".



**Dr. Vilas Mujumdar**

Vilas Mujumdar has been an independent consulting engineer since 2009. Previously he was CEO, President and Partner in many large engineering firms and at highest-level in the public sector; Chief of Operations, Division of State Architect, State of California; Director, Engineering Research Centers Program at the National Science Foundation (NSF). His professional experience includes Design, Project Management, Teaching, and Research Management in Asia, Europe, Canada and the US.

Vilas Mujumdar is a recipient of many awards and recognitions nationally and internationally. He currently serves on American Society of Civil Engineers (ASCE) board of Direction and has served on the Board of Direction of many other Professional Societies He is recognized internationally for his leadership and contribution to integrated trans-disciplinary work in reducing natural hazard risks, and is proactively involved in addressing resilience and sustainability issues facing the global society.

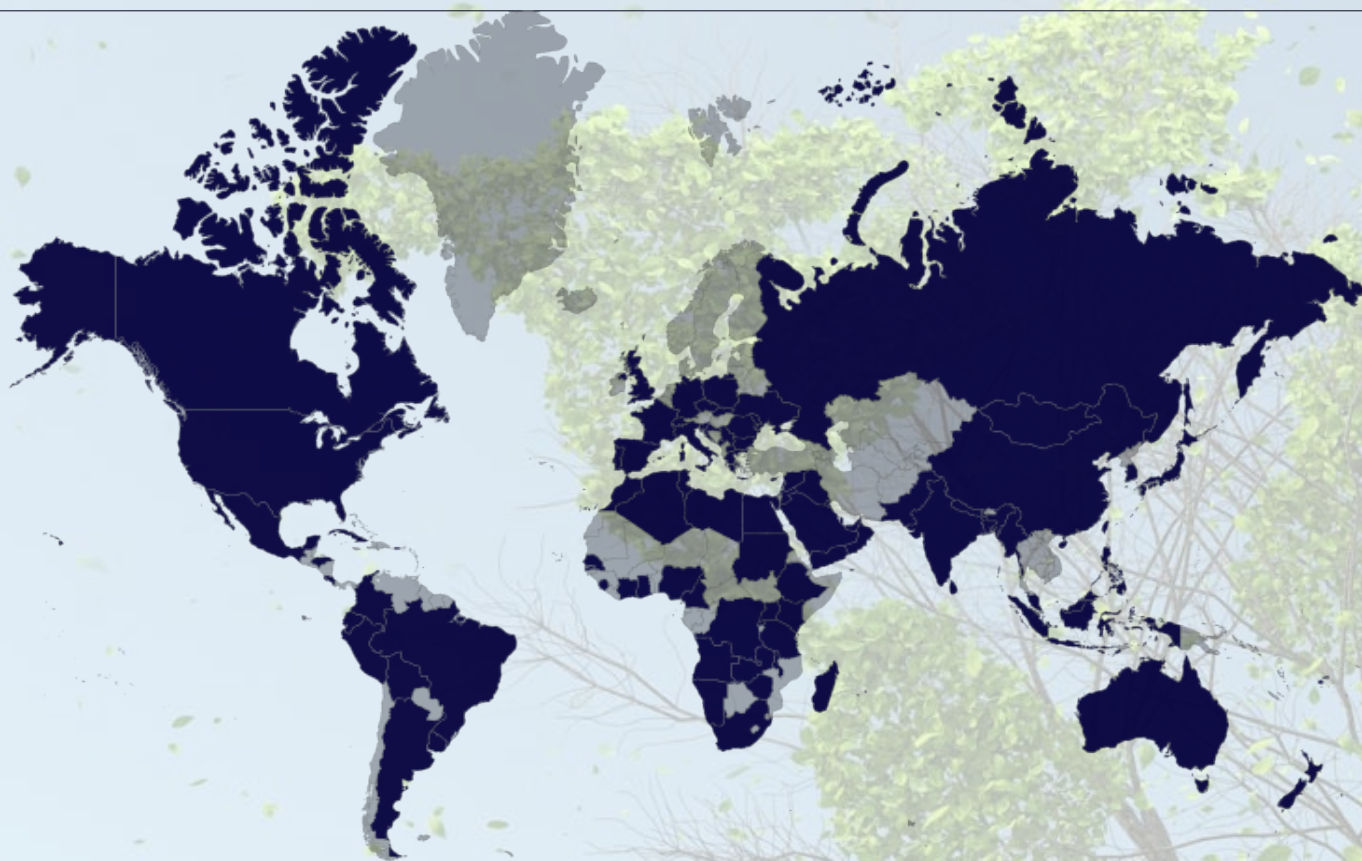
An author of two books, 85 papers, and keynote speaker for over 30 international conferences, Vilas Mujumdar's leadership experience in the field of engineering is immense. He holds his doctorate in public administration and public policy (seismic risk), a master's degree in structural engineering, and a bachelor's degree in civil engineering. Mujumdar also received a master of business administration in finance.

Vilas Mujumdar was awarded the WFEO Medal of Engineering Excellence in November 2019.



# WFEO Members

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



## National and Affiliated Members

<b>Algeria</b>	Union Nationale des Scientifiques et Technologues Algériens
<b>Angola</b>	Engineer Angolan Association
<b>Argentina</b>	Junta Central de los Consejos Profesionales de Agrimensura, Arquitectura e Ingeniería
<b>Australia</b>	Engineers Australia
<b>Bahrain</b>	Bahrain Society of Engineers
<b>Bangladesh</b>	Institution of Engineers, Bangladesh
<b>Bolivia</b>	Sociedad de Ingenieros de Bolivia
<b>Brazil</b>	Federal Council of Engineering, Architecture & Agronomics
<b>Bulgaria</b>	Federation of the Scientific – Engineering Unions in Bulgaria
<b>Cameroon</b>	Association Professionnelle des Ingénieurs Conseils et Sociétés d'Ingénierie du Cameroun
<b>Canada</b>	Engineers Canada
<b>China</b>	China Association for Science and Technology
<b>Chinese Taipei</b>	Chinese Institute of Engineers
<b>Colombia</b>	Sociedad Colombiana de Ingenieros
<b>Congo Democratic Rep.</b>	Ordre National des Ingénieurs Civils
<b>Costa Rica</b>	Colegio Federado de Ingenieros y de Arquitectos de Costa Rica
<b>Côte d'Ivoire</b>	Fédération Nationale des Organisations d'Ing. Architectes Géomètres et Urbanistes de Côte d'Ivoire
<b>Croatia</b>	Croatian Chamber of Civil Engineers
<b>Cuba</b>	Unión nacional de arquitectos e ingenieros de la construcción de Cuba
<b>Cyprus</b>	Scientific Technical Chamber of Cyprus
<b>Czech Republic</b>	Czech Association of Scientific and Technical Societies
<b>Ecuador</b>	Sociedad de Ingenieros del Ecuador
<b>Egypt</b>	Egyptian Engineers Syndicate
<b>Eswatini</b>	Architects, Engineers, Surveyors & Allied Professionals of Eswatini
<b>Ethiopia</b>	Ethiopian Association of Civil Engineers
<b>Fiji</b>	Fiji Institution of Engineers
<b>France</b>	Ingénieurs et Scientifiques de France



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 Hong Kong, SAR of China  
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 The Philippines  
 Tunisia  
 Uganda  
 Ukraine  
 United Arab Emirates  
 United Kingdom  
 United States, America  
 Uruguay  
 Yemen  
 Zambia  
 Zimbabwe

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

## International Members

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

## Distinguished Fellows

Prof. Dr. Jürgen Kretschmann  
 Dr. Vilas Mujumdar

## Corporate Associates

Archirodon NV  
 Consolidated Contractors Company (C.C.C)

## Non-for-Profit Associates

Colegio de Ingenieros Civiles del Estado de Jalisco A.C. (CICEJ)  
 DMT Society for Teaching and Education (DMT-LB)  
 European Council of Engineers Chambers (ECEC)  
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## China Association for Science and Technology

The China Association for Science and Technology (CAST) is a mass organization of Chinese scientists and engineers, which is composed of multiple national professional societies and hundreds of branches at various local and international levels. CAST was formed in September 1958 through the merger of the All-China Federation of Natural Science Societies and the All-China Association for Science Popularization. CAST is the WFEO National member representing China.



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## World Geospatial Industry Council

Headquartered in the Netherlands, WGIC is an association of companies representing the entire ecosystem of the geospatial industry. WGIC endeavors to:

- Enhance the role of the geospatial industry and strengthen its contribution in global economy and society,
- Facilitate exchange of knowledge within the geospatial industry and co-creation of larger business opportunities for the geospatial industry,
- Represent business interest, share perspectives of the geospatial industry and undertake policy advocacy and dialogue with public authorities, multilateral agencies and other relevant bodies.

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“As a trained engineer I am passionate about the potential  
of engineering to help solve the most pressing challenges  
facing our world“,

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