



Young Engineers / Future Leaders Committee
WORLD FEDERATION OF ENGINEERING ORGANIZATIONS



YOUNG ENGINEERS FUTURE LEADERS COMMITTEE REPORT

2011 – 2019



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Official Establishment of the YEFL STC in WFEO – Geneva 2011

The World Federation of Engineering Organizations (WFEO) Executive Board Meeting in Paris, France, (March 16-17, 2009), culminated in the acceptance of the Committee for Capacity Building (CCB) proposal to establish a Young Engineers/ Future Leaders (YE/FL) Task Group.

At the WFEO Energy Congress in Kuwait, 2009 (“Alternative Energy Application Option or necessity?”), the CCB encouraged the WFEO member countries to organize their young engineers for participation at the first YEFL council meeting at the WEC 2010 held in Buenos Aires, Argentina.

Young Engineers / Future Leaders (YE/FL) officially approved as one of the ten standing technical committee of the WFEO in Geneva at the conference of 2011 World Engineers Convention and WFEO General Assembly where the young engineers, students and council members gathered as official members from the engineering associations of national member countries.



YEFL Team at the WEC 2011 Conference in Geneva

YEFL STC at the 7th UNESCO Youth Forum in 2011

The YEFL STC made a first external representation at the 7th UNESCO Youth Forum held in Paris in October 2011. The Forum was attended by Young Engineers from all over the world representing the UNESCO member countries. This forum gave Young Engineers the opportunity and platform to showcase the youth power in various dimensions. The forum’s main theme was ‘How Youth drive changes’ and the sub themes were ‘Citizens in action: youth in



Meeting with Ms. Irina Bokova-

political and public life', 'Countering youth exclusion and violence' and finally 'Breaking through employment barriers.'

YEFL STC Program at the WFEO Conference – Slovenia 2012

YEFL Committee Program at the 2012 World Engineers Forum in Slovenia included:

- Networking Event – the idea of the event was to provide a relaxed environment for Young Engineers to engage with other YEs around the world, share learnings on the nascent YE links to the organizational structures in the national engineering bodies, expand networking opportunities within the YE global community and challenge practicability of garnered cross-regional experiences with more senior engineers.
- Technical Event – this was directly linked to the conference theme of 'Sustainable Construction'. The sub-themes discussed included project management, ethics and YE experiences working with foreign countries.
- Technical Trip – an opportunity for the international YE's group to experience the technical sightseeing tour to Slovenia's grand infrastructural



landmarks, traditional industries, facilities etc.

- YE General forum – an opportunity for YEs to discuss the local, national and regional YEFL issues and way forward.

Pictures from the YEFL Committee Program at the 2012 WFEO Conference - Slovenia

YEFL Youth Convention in Kuwait- 2013

The first Youth Convention held by the World Federation of Engineering Organizations, Young Engineers/Future Leaders (YE/FL) STC took place in Kuwait from 10 to 12 February 2013 under the patronage of His Highness the Amir of Kuwait.



- There were three days of technical sessions covering a variety of topics relevant to young engineers, from how to start your own business, to humanitarian work in the developing world.
- The convention held in Kuwait marked the first time that the YE/FL had held an independent function during WFEO sanctioned events. It was a large undertaking and a great success for this young committee. The three themes of the convention included: Youth, Engineering and Technology, and Global International Relations.
- This successful event was generously sponsored under the patronage of His Highness, the Amir Sheikh Sabah Al-Ahmad Al- Sabah. The speaker who represented the Amir of Kuwait mentioned that this conference was an important building block in the youth movement, bringing together engineers from over 105 global engineering organizations who are patriots, devoted to their home countries, and their fellow citizens through engineering works to benefit humanity.

The YEFL STC also had the honor of inviting the President Elect of WFEO Mr. Marwan Abdelhamid and the presence of Ms. Gretchen Kalonji, Director of Natural Sciences at the United Nations Education, Scientific, and Cultural Organization (UNESCO), who spoke during the opening ceremony and pledged her support to the YE/FL. Ms Kalonji also committed to strengthening youth relationships globally, using UNESCO's network in whatever way may be beneficial to the YE/FL. In addition, Ms. Kalonji committed to have UNESCO and the YE/FL working hand-in-hand to realise the goals of this YEFL STC global movement of young engineers working together worldwide. Ms. Kalonji congratulated the Kuwaiti Young Engineers for their achievements. She stated 'The Kuwait Society of Engineers were the most well organized and effective YE group she had seen'



Kuwait Minister Representative , KSE President Mr. Husam Al Kharafi, along with Ms. Kalonji and Mr. Abdelhamid during the Youth Convention in Kuwait 2013



YEFL STC at the WFEO Conference in Singapore 2013

The YEFL committee activities at the World Engineering Summit in 2013, Singapore, included three well-attended events, with record participation and input from YEs and attendees:

- YE Day at One North where several young engineers participated in the YE day at Fusionopolis. This event was organized by the Young Engineers at the Institution of Engineers Singapore and aimed to promote engineering as a course of study.
- YEFL Day at IES Headquarters where two speakers from the US presented on 3 topics – Water Sustainability in the Alberta Oil Sands, personal and professional development, including networking and the Modern Engineer.
- YEFL informal discussion regarding Future of YE/FL Projects and possible issues to undertake for the next half STC tenure and beyond. There was a high level of YE and attendees' participation in the brainstorming sessions for new way of working, what YEs can take from these experiences, and how to create similar experiences for YEs unable to physically attend conferences, but still desiring to participate. Emphasis was placed on creating a strong virtual presence so that the obstacle of lack of funding as a deterrent for YE participation could be largely mitigated.



Pictures from the YEFL Committee activity at the 2013 WFEO Conference - Singapore



YEFL STC at the 8th UNESCO Youth Forum in Paris, 2013

- The YEFL STC participation at the 8th UNESCO Youth Forum at the UNESCO, Headquarters in Paris in October 2013 was an opportunity to showcase the WFEO and YE/FL journey at a booth in the Youth Forum. Ms. Irina Bokova, UNESCO's Director- General, Mr. Abdulaziz Othman Altwaijri and other inspirational young leaders helped to set the scene and share their vision to have quantifiable youth contribution to resolving pressing global issues.
- The Youth forum had plenary debates on 'Youth and social inclusion – Civic management, dialogue and skills development' in line with UNESCO operational strategy on Youth 2014 – 2021.
- The YEFL team also attended technical sessions and workshops that took place for consecutive three days.



Ms. Irina Bokova- DG UNESCO, Eng. Zainab along with YE members at the WFEO YEFL Booth

YEFL STC Program at the 2014 WFEO Conference - Nigeria

The YEFL Committee events at the 2014 World Engineers Conference on Sustainable Infrastructure in Nigeria gathered 350 YEs and stakeholders from the academia, industry and government in Africa to discuss the role of YEs in building sustainable infrastructures in Africa and the support required by YEs to meet demands of this vital role. In attendance were the WFEO President Engr. Marwan Abdelhamid, WFEO Communications Consultant Andrew Lamb, NSE Vice President Engr Mrs Oguntala, Ove Arup and Partners Nigeria CEO, Engr Kunle Adebajo, Shell Petroleum Development Company Projects Operated General Manager, Engr Toyin Olagunju (represented by Engr Godian Ehirim), Autodesk (Costech), African Energy Association, Nigerian Breweries, WSP South Africa, the Institute of Engineers of



Kenya (IEK), Young Engineers Humanitarian Technology Ambassador, Ogundeko Ibrahim, and YEs from Kenya, South Africa and Nigeria.

The Young Engineers international Project Competition was held with participation from over 150 YEs in Africa, industry professionals and other stakeholders. The project finalists were:

- Reducing Energy Wastage through Smart Wiring Model – Systems Analysis
- Design and Construction of GIS Driven Mobile Application for infrastructural Development – Provisioning
- Simulation using a constructed Drone.
- Infrastructure Design for Food Production
- Consumption and Poverty Eradication – Construction of a mechanically propelled tricycle liquid sprayer and Semo, Wheat and Amala (SWA) processing machine
- Scenario Infrastructure Planning for Sustainable Livelihood – System Analysis Auto-run Cell Phone – George Ouma (University of Nairobi)

The post-WECSI networks enabled a continued platform for young Engineers to showcase ingenuity, support for the project groups to develop and maintain the connections for developing people-sized technologies, provision of coaching and mentorship to YEs through national and international partnerships



Organizers - Charles Emuze, Azubuike Madu, Eloho Emose, Project Winners and Participants

WFEO YEFL STC International Strategic Planning Forum – Stakeholder Collaboration for Global Integration of Youth in Industry- Middle East Region (Kuwait 2015)

The first Stakeholder Collaboration for Global Integration of Youth in Industry was held in Kuwait in March 2015 for three days. This forum came about as the result of the outcomes from the first Young Engineers/Future Leaders Conference in Kuwait in February 2013 and marked the second independent YE/FL standing committee



(STC) function from WFEO events. The outcome from the forum contributed to the YEFL STC's strategic plan by inviting stakeholders involved in YE development (Academia, Industry, Governments and Stakeholders) from across the Middle East region to have an open dialogue on stakeholders' needs and expectations.

The workshop was divided into three themes:

- what companies need from fresh graduates and young engineers;
- what universities know about industry expectations; and
- how third parties are trying to fill the gap between university life and work life by preparing young engineers to work in private sectors.

A day each was dedicated to focusing on the major stakeholders' concerns: Academia, Industry (Public & Private Sector), Governments to identify the gaps between YEs formal education, available resources and opportunities and YEs' capability to function in industry.



At the 1st International Strategic Forum in Kuwait 2015

YEFL STC at the 9th UNESCO Youth Forum

The YEFL STC representation at the 9th UNESCO Youth Forum in Paris in October 2015 contributed to UNESCO focus on Young Global citizens for a Sustainable Planet. The session was opened by the UNESCO Director-General, and YEFL STC had a dedicated booth at the event to highlight YEs contribution to realizing the goal of having a sustainable planet.

The program was followed by an open area free time in a casual exhibition room where participants had the opportunity to engage and network with UNESCO partners at the Forum via the dedicated Marketplace stands.



YEFL Team members on the WFEO YEFL Booth Side



YEFL STC at the 2015 WFEO Conference in Japan

The YEFL STC official meeting gathered 28 YEs from WFEO member countries who provided updates on YE activities at the national levels followed by discussions on the STCs events in 2015 including the outcomes of the international strategic planning forum – Stakeholder Collaboration for Global Integration of youth in Industry for Middle East region, which took place in Kuwait in March 2015, and YE STCs' participation at the 9th UNESCO Youth forum held in Paris, October 2015.

The 2nd YEFL STC International Strategic forum for the Asia Pacific region was also held at the World Engineers Conference and Convention in Japan. The YEFL STC took advantage of the extensive stakeholders' participation at the conference as a great opportunity to gather stakeholders involved in YEs' development in the Asia-Pacific region. Lessons from the outcomes from the Middle East engagements were captured in the planning of the Asia Pacific sessions with the goal of targeting the peculiar concerns, situations and challenges faced by young engineers in the region as they transition into industries.

The forum discussed three key themes:

- **Innovation of Youth in Industry** – this was related to Innovation of Youth in Industry' with a focus on the reality of 18-year old CEOs, child mobile app developers, and collegiate humanitarians in various industries and sectors.
- **University Preparation of the Young Engineer for Employment** – the second theme focused on the Universities' perspectives on availability of sabbaticals in industry positions, internships and trainings for students and graduate engineers in industries, and YEs' preparedness to contribute to industry as quickly as they are recruited into industry roles. Discussions also narrowed down to the perceived areas for improvement.
- **Company Objectives when Hiring New Talent** – the third theme focused on discussing problems companies (private and public) face when hiring or working with young engineers. Also, how companies present themselves to attract YEs in own organizations with opportunities for growth, more freedom to express creativity in the delivery of assigned responsibilities. Most companies were concerned that fresh YE graduates had very limited understanding of the workings of professional life and need an early exposure to this to enable better preparedness.



During the 2nd YEFL International Strategic Forum- Japan

UNESCO Workshop on Science and Knowledge for Advancing the 2030 SDGs in the Arab Region – Egypt, 2016

The YEFL STC Chair, Eng. Zainab Garashi, was invited to the UNESCO's Bureau for Science for the Arab States, to attend a workshop on Science and Knowledge for Advancing the 2030 SDGs in the Arab Region", (25 - 26 May 2016) in Cairo, Egypt.

The main objective of the workshop was to formulate a joint vision and outlines of a master plan for the effective activation and deployment of science and knowledge for achieving the SDGs in the Arab region. More specifically, the workshop aimed to identify major issues, challenges and opportunities as well as the key responsibilities of stakeholders including the potential role of UNESCO's Regional Bureau for Science in the Arab States (UCO) in advancing the Science/Knowledge and SDG agenda in the Arab region. The workshop gathered 30 selected regional experts from 10 Arab Countries.



Roundtable Discussion with the regional experts from 10 Arab Countries



YEFL STC at the WFEO Conference in Peru- 2016

During the WFEO Conference of World Engineering Conference on Disaster Risk Reduction (WECDRR).The YEFL STC official meeting held with 29 YE national delegates in attendance to discuss progress in own national YEs groups and activities held within the year including the UNESCO Roundtable for the Arab Region in Egypt and how YEs can better contribute to the 17 sustainable Development Goals of the United Nation for 2030.

The planned robust conversations with stakeholders as part of the international strategic planning forum - 'Stakeholder Collaboration for Global Integration of youth in Industry in the South American region' could not hold as attendees and stakeholders from industry, university professor and students could only contribute via questionnaires prepared for that purpose. The inputs from stakeholders via the questionnaires were further reviewed with specific stakeholders to align divergent positions and ensure a shared understanding with uniformity of purpose before engagement outcomes were published.



YEFL activity during the WECDRR in Peru



ECOSOC Youth Forum- 2017

The YEFL STC was approached by UN Major Group for Children & Youth through Donovan Guttieres – Focal point for Science. The Policy Interface Platform from the US and one of our YEFL member were requested to co-organize the side event – “Eradicating poverty and promoting prosperity in a changing world” during the ECOSOC Youth forum in January 2017.

UNESCO NGO Forum in Saudi Arabia-2017

The YEFL STC Chair attended the 8th UNESCO NGO forum “Youth Social Impact” which took place in Riyadh, Saudi Arabia from 3 - 4 May 2017. It was organized in partnership with MISK Foundation in KSA. There were several sessions held with distinguished panelists. The event provided a very good forum and opportunity to have open discussions and connections for collaborations.



*Left - Eng. Zainab
along with Ms.
Khalida Brohi*



*Right - Eng. Zainab
Along with Mr.
Dejan Bojanic*

UNESCO Plenary Session "Knowledge and Science for Development within LAS Arab SD week – Egypt 2017

The YEFL STC Chair, Engr Zainab Garachi, was invited to the UNESCO regional Bureau for science and technology in the Arab states as a panelist in the plenary session on the “transfer and localization of knowledge and technology in the Arab region which was held from 14 - 18 May 2017 in Cairo. This was held as part of the Arab week for Sustainable development with a focus on garnering YES’ position at the event.



Eng. Zainab presented a 7 minutes presentation which included an introduction about WFEO with a focus on the Arab countries as national members. She also shared the WFEO organizational structure, showcasing the 10 WFEO standing committees to give a general idea on WFFEO activities and coverage of different perspective of engineering and our contribution towards it. The presentation also highlighted the goals and progress on the YEFL regional strategic forum with participants showing more interest to participate and contribute the delivering the strategic forum objectives.



Plenary Session Discussion During the SD week

The YEFL STC at the WFEO Conference in Rome 2017

The YEFL Committee activities at the World Engineering Forum in Rome 2017 comprised the YEFL STC official meeting with 24 YE national delegates and members. The 4th International Strategic forum also held with a focus on Europe as a follow up from the Stakeholder Collaboration for Global Integration of Youth in Industry held in Kuwait in 2015 for Middle East Region, Asia- Pacific Region in Japan in 2015 and South America in Peru 2016. Following the structure and format of previous forums, the Europe forum provided a platform for stakeholders (academia, industry, governments etc.) involved in young engineers' development to discuss region-specific issues, with a focus on the EU/UK and the intention of clearly articulating a global position towards bridging the gap between young engineers'



ingenuity and industry/societal challenges. The theme for the forum was aligned with the conference theme of 'Safeguarding humankind's heritage' and the role of YEs in achieving that goal.

A position paper summarizing the issues identified across all four regional forums held from 2015 to 2017 was prepared as well as the proposed solutions which was to be presented to the WFEO and socialized with the wider global community (UNESCO, UN, World Energy Council etc.).



During the YEFL Strategic Session in Europe Region

The WFEO Young Engineers Project Competition- 2018

In June 2018, the YEFL STC prepared a call for papers to invite Young engineers around the world to write articles targeting the realization of the UN SDGs. The top articles were selected and sponsored to attend the YE event at the WFEO annual conference in London in October 2018. 150 project submissions were received from 30 countries around the world, 11 percent of these were from women. The Project Panelists and assessors included the WFEO President, Dr Marlene Kanga, the President Elect, Prof. Gong ke and the YEFL Chair, Eng. Zainab Garachi. The global finalists (top 10 submissions) were invited and the winner sponsored by the Kuwaiti Society of Engineers to present their projects, ideas and perspectives in London at the 2018 annual WFEO conference.



WFEO President Dr. Marlene Kanga and Eng. Zainab Garashi and some of the Participants

The YEFL STC at the WFEO Conference in London 2018

The YEFL STC activities at the 2018 Global Engineering Congress (GEC2018) in London included the YEFL STC official meeting with 31 national delegates and members to discuss national and regional activities held within the year. The YEFL project competition, the progress with the International Strategic Forum, the review of UNESCO Engineering Report-II sub-section on Arab states and sub-section on Youth and Engineering.

Dedicated sessions on Humanitarian Engineering and & UN SDGs were held as part of the GEC2018. Four project presentations were made by distinguished speakers who had applied humanitarian efforts and engineering in selfless service to humanity while the second session was the presentation of the projects of the Young engineers' finalists to progress the UN Sustainable Development Goals via the international competition hosted by WFEO.

YEFL STC Activities in 2019



This year, the YEFL STC's focus is on sharpening the outcomes of the International Strategic forums already covered and cover the grey areas (and regions) yet to be fully incorporated into the YE position. The outcomes from the forum in the Middle East region, Asia Pacific region and Europe region were robust due to the time dedicated to discussing the concerns of all stakeholders however the South American region was only covered by a questionnaire and follow-up alignment discussions to align divergent position and ensure a shared understanding of the regional position of all stakeholders. The YEFL Peru Representative expanded on this outcome by organizing a more robust conversation among a wider spectrum of stakeholders to arrive at a more representative South American position capturing the concerns and dialogue held this year. A short report on the 2019 forum as presented by the YEFL Peru Representative is below:

2019 Forum Themes (Piura, Peru)

Young Engineers' difficulties in the first years of practice of the profession

While the CIP extends the credential that allow Young Engineers to legally practice the engineering profession within Peru, at the same time, the industry is additionally asking for at least 3 to 5 years of previous experience and proven leadership and project management skills to apply for a job. The Academia may contribute to bridge this gap by introducing pre-grade courses in leadership and project management skills, which have demonstrated in the last years, that give a plus to the candidates when applying to a new job, especially for the first job. The CIP may also contribute by including among their services Employability Workshops for Young Engineers and coordinate with the industries the main subjects and topics required that potential employees know, and schedule trainings in those topics. Some universities of precedence are prioritized when hiring young engineers. To hold a Project Management Credential is valued in some industries, especially construction and mining, so Young Engineers and engineering students are seeking for a Credential such as the Certified Associated in Project Management (CAPM) in the last year of pre-grade studies. Low salaries and short-term contracts for Young Engineers were also pointed out, and some additional and deeper studies should be conducted regarding offer and demand of engineering professionals in the South America Region. Finally, all the Universities should install offices that help the students of engineering get an internship within the country and abroad to get faster and earlier involvement with the industry.

Industries' Expectations from Young Engineers

Commitment, accountability and values are expected in general as the main qualifications when starting in new jobs. Innovation, flexibility, mobility, easy embracing of changes, continuous learning, generation of fresh ideas and continuous improvement are the main qualifications additionally expected from Young Engineers. Industries also expect that young engineers may have main technical roles in digital transformation projects. They expect that Young Engineers would adapt fast to their organization and start delivering the works assigned under



their responsibility from the first moment. Regarding this topic, it was mentioned that industries should consider a period of adaptation of the order of three months before starting asking for concrete results in the assignments given. Finally, was suggested that industries should have a minimal percentage of young professionals in their staff as mandatory by law to foster their integration to the labor market.

Young Engineers' main contributions to the industry

Young Engineers may contribute as being fresh people eager to learn, with values and knowledge from the last launched technologies, which could help the industries make faster and easier processes within the organization. Also, it was mentioned that within a project, if experienced engineers would let young engineers integrate their teams and assigned them significant responsibilities, the outcomes of the project would be better.

Conclusion

These points are but a few of many listed in the questionnaire and from inputs collated for the South America region (Peru – Lima 2016) and in the forum for Young Engineers (Peru – Piura 2019). We plan to carry on these discussions for the other regions of the world, and jointly identify the global issues and present a position with potential solutions covering young engineers' regional experiences.

At the end of the regional forums, we plan to issue a position paper which is expected to be a working document providing guidance to governments and policy makers and containing the strategy for bridging the gap between young engineers' academic development and industry requirements. We aim to create metrics for monitoring these issues and track changes which may be brought about as result of our discussions and aligned position.

Humanitarian Engineering Session & the UN SDGs Project Competition