



WORLD FEDERATION OF ENGINEERING ORGANIZATIONS
FÉDÉRATION MONDIALE DES ORGANISATIONS D'INGÉNIEURS

1. Opening Statement

This report presents the contributions of the World Federation of Engineering Organisations (WFEO) as a member of the Science and Technological Community (STC) Major Group in implementing the Sustainable Development Goals (SDGs) in accordance with Paragraph 89 of Agenda 2030.

The World Federation of Engineering Organisations is the peak body for engineering, and has recognised that engineering is critical to advance the UN Sustainable Goals. Accordingly, the Federation has developed a plan of action which brings together its members and partners to develop and implement projects that advance the 2030 Agenda.

WFEO has a long history of contributions to sustainability and sustainable development. For example, the Committee on Engineering and the Environment (CEE) developed the WFEO Model Code of Practice for Sustainable Development and published it in 2013.¹ The Code of Practice is supplemented with a detailed interpretive guide. The committee also developed a Model Code of Practice on the Principles of Climate Change Adaptation for Engineers that was accepted by WFEO in 2015.² CEE has been promoting its principles in various climate venues.

The achievements to date will demonstrate the contribution to engineers and enable member states to consider policies and funding that can support some of the initiatives and thereby increase the impact of the projects that are in progress.

2. Summary

The UN Sustainable Development Goals (UN SDGs) take an integrated approach for future development, combining progress in economic prosperity, social inclusion and environmental sustainability. Every one of these goals requires engineers and engineering.

The World Federation of Engineering Organisations (WFEO) has a plan of action that addresses every one of the UN SDGs. This report will focus on progress being made to advance Goals 4, 13, 16 and 17 which are part of the focus for the HLPF meeting in 2019.

¹ WFEO Model Code of Practice for Sustainable Development and Environmental Stewardship
https://www.wfeo.org/wp-content/uploads/code-of-practice/WFEOModelCodePractice_SusDevEnvStewardship_One_Page_Publication_Draft_en_oct_2013-3.pdf

² WFEO Model Code of Practice on the Principles of Climate Change Adaptation for Engineers
<https://www.wfeo.org/wp-content/uploads/code-of-practice/WFEOModelCodeofPracticePrinciplesClimateChangeAdaptationEngineers.pdf>

The Federation commenced a co-ordinated and strategic approach with the development of a unifying vision that brought together the members of the Federation to achieve the common objective of advancing the 2030 Agenda. The imperative for action by engineers arose from:

- The urgent need to address many of the UN Sustainable Goals such as climate change, access to clean water and sanitation and energy, sustainable cities and resilient infrastructure, which all require engineering
- The recognition that engineers are critical to advancing the goals for sustainable development
- The role of the World Federation of Engineering Organisations, as the peak body of engineering international, to bring together engineers with the focused purpose of advancing the 2030 Agenda.

The *Paris Declaration* signed by UNESCO and WFEO on 7 March 2018, as part of our 50th anniversary celebrations, stated the commitment of the Federation and the world's engineers to sustainable development and to advance the 2030 Agenda, see Appendix 1.

The Declaration has given rise to an action plan that has been taken up by the members and the technical committees of the Federation as well as our partners.

A very positive outcome has been the engagement of young people in the vision of the Federation and the ability to speak about engineering in new language that is empowering. The vision of the key role of engineering in to make the changes urgently needed for basic amenities like water and sanitation in developing countries and address issues relating to climate change, cities and resilient infrastructure in the developed countries also, provides a new imperative for young people to become engineers. This message will be used to great effect in the coming years.

Another spillover effect is the engagement of ~~and~~ other organisations that do not have direct relationships with the Federation. These organisations are also in the area of engineering and have embraced the idea of the role of engineer in advancing sustainable development. For example, the Royal Academy of Engineering, U.K. and the Happold Engineering Foundation are engaging with young people, in particular with the message of the important role of engineers in sustainable development.

A key outcome has been the engagement with Member States on the work of the Federation. The proposal for World Engineering Day for Sustainable Development, supported by Member States, has led to greater engagement and collaboration which is expected to lead to specific projects that involve the members and partners of WFEO to support national objectives and frameworks.

A key challenge is the limited resources to support the work of the Federation. Our organisation has developed an action plan and the processes required to advance the UN SDGs but progress will continue to be slow without more resources - human and financial - to devote to this important work. Full implementation of the WFEO Action Plan will have a large multiplier effect in terms of the outcomes that will be achieved.

3. Introduction

This report presents the results of the review of progress being made by the members and partners of the World Federation of Engineering Organisations (WFEO) in advancing the UN Sustainable Development Goals.

This document provides an overview of progress being made with the projects that are being undertaken by WFEO Standing Technical Committees, national and international members, associates and partners. These projects were first presented at the WFEO 50th Anniversary Symposium held in Paris on 7th March 2018 and are ongoing. Further progress reports will be provided annually.

4 Methodology and Process for Review

Progress is reported annually by the members, committees and partners of the Federation. Periodic reports and presentations are made to the Federation during its various meetings and an annual report is prepared to show progress that is being made. Each project leader has been requested to provide a summary of activities and quantitative information on achievements during the year.

The first progress report was produced in October 2018 and the second report will be delivered in Melbourne in November 2019. See

https://www.wfeo.org/wp-content/uploads/un/WFEO-ENgg-Plan_final.pdf.

5 Policy and Enabling Environment

5.1 Creating Ownership of the SDGs

In September 2015, the world came together to declare the new UN Sustainable Development Goals. These goals take an integrated approach for future development, combining progress in economic prosperity, social inclusion and environmental sustainability. The implementation of these goals is a key objective of the World Federation of Engineering Organisations.

The World Federation of Engineering Organisations is the peak body for engineering, representing nearly 100 nations and 30 million engineers. It is the voice of engineering at an international level and promotes the important role of engineers in key issues that the world is now facing: sustainable development, the growth of our cities, climate change and strategies for energy production to meet the needs of the growing population around the world.

In this work, the World Federation of Engineering Organisations is recognised by government, intergovernmental organisations, international NGOs and the public in general as a respected and reliable source of advice and guidance on strategies and policies that use engineering and technology for the benefit of human development and wellbeing and sustainable outcomes.

The Mission of WFEO includes:

- To represent the engineering profession internationally, providing the collective wisdom and leadership of the profession to assist national agencies choose appropriate policy options that address the most critical issues affecting countries of the world.
- To enhance the practice of engineering.
- To foster socio-economic security and sustainable development and poverty alleviation among all countries of the world, through the proper application of technology.

WFEO therefore has a key role in leading and co-ordinating the various projects for developing engineering capacity for maximum long term impact to achieve the UN Sustainable Development Goals. WFEO is able to bring together educational institutions, government and industry to facilitate projects that address the need for engineering capacity in various regions of the world. The national and international members of WFEO, that are leading professional engineering institutions, will play a key role in this endeavour and in developing country and region specific responses.

The celebration of WFEO 50th anniversary in 2018 was a catalyst to develop a framework for an action plan for the engineering capacity that is required to achieve the UN Sustainable Development Goals (SDGs). The first step was the signing of the Declaration between UNESCO and WFEO on the commitment to advance the UN Sustainable Development Goals through engineering, see Appendix 1. The *Paris Declaration* was an acknowledgment of the key role of engineers in advancing the UN Sustainable Development Goals and to create ownership of these Goals among its members and partners.

Engineers and engineering is critical for achieving the UN Sustainable Development Goals. Engineers have a key role in supporting the growth and development of essential infrastructure such as roads, railways bridges, dams, communication, waste management, water supply and sanitation, energy and digital infrastructure which facilitate communications. They enable a country's economy to grow and develop and this in turn can lead to better economic and social outcomes including improved life expectancy, higher literacy rates and better quality of life; see e.g. *Engineering and Economic Growth: a global view*.³

There is an important link between a country's engineering capacity and its economic development. Engineers are responsible for the modern world – from the houses we live in, the food we eat, the transport we use and all the comforts derived from electricity and clean water supplies. However, with half the world living in poverty and millions of people without sufficient food or sanitation, engineering is needed to support the progress of sustainable

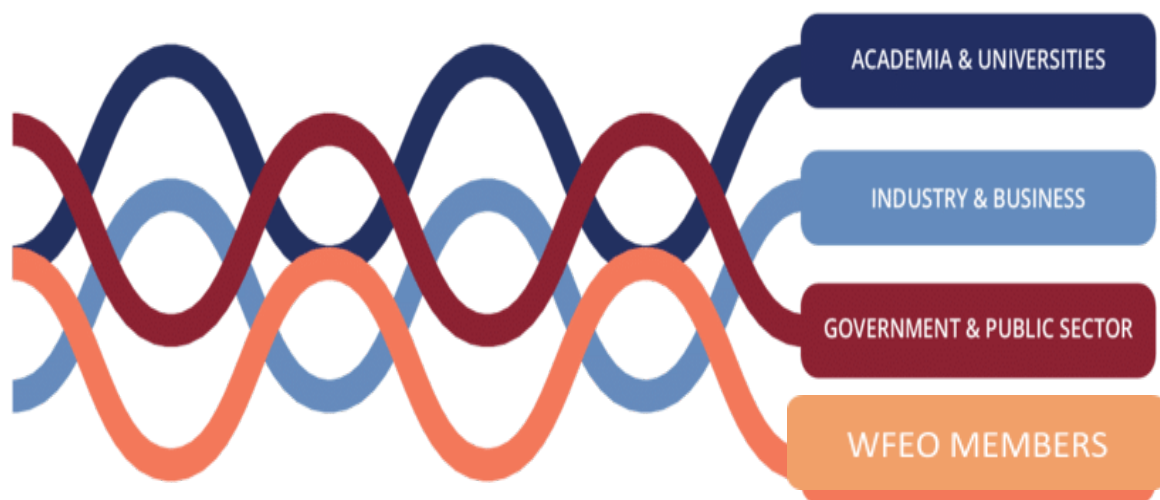
³ UK Royal Academy of Engineering (2016) *Engineering and Economic Growth: a global view*, <https://www.raeng.org.uk/publications/reports/engineering-and-economic-growth-a-global-view>

development across the world. This is the unfinished business of engineers which is being addressed by the **WFEO Engineering 2030 Plan**.

5.2 Incorporating the SDGs in the work of WFEO – the WFEO Engineering 2030 Plan

As the peak body for professional engineering institutions, the World Federation of Engineering Organisations has a key role to lead the development of engineering capacity of appropriate recognised standards for sustainable development. An Action Plan was developed – **WFEO the Engineering 2030 Plan**.

The **Plan** is based on a quadruple interaction of government, academia, industry and professional engineering institutions which is best described in the Quadruple Helix Model between the professional engineering institutions that are the members of WFEO academia and universities, industry and business and government.



The Partnership Model to Achieve the WFEO Engineering 2030 Plan

The Partnership Model activates **UN SDG#17** where every group has an important role:

- **The Professional Engineering Institutions:** WFEO already has long standing established relationships with professional engineering institutions around the world with 100 national and international members. WFEO is working with its members, through specific projects, to achieve the goals of the WFEO Engineering 2030 Plan. In particular, the WFEO Standing Technical Committees and Policy Implementation Committees, that are hosted by WFEO national members, have access to specialised expertise and capacity to deliver specific activities and outcomes which advance the UN Sustainable Development Goals.

- **Engineering Educators – Universities, technical Institutions and Associations:**
WFEO is collaborating with universities and other educational institutions, accreditation bodies and international organisations involved in engineering education to bring together the relevant parties with the expertise and experience in engineering education from around the world to support the development of the best standards for engineering education and the development of engineering capacity in countries in greatest need of engineers.
- **Industry Associations and large companies:** WFEO is working with industry and industry associations in the engineering sector to mobilise the resources with the expertise and experience to engage with industry and employers to:
 - inform desired graduate outcomes from engineering education, especially with rapidly changing needs as a result of technological advancements;
 - determine desired professional development requirements so that engineers are competent in their disciplines throughout their careers.

5.3 Goals and Targets for Action

The Goals and Targets for action to activate the WFEO Strategic Plan through the WFEO Engineering 2030 Plan are:

1. **Address the need for more engineers** - and encourage young people, boys and girls, to consider engineering as a career
2. **Ensure appropriate standards in engineering education** – which address current and future needs of industry and society including teaching approaches (pedagogy), the use of technology and graduate outcomes
3. **Ensure appropriate pathways for professional development** - so graduates and engineering practitioners meet employer needs and community expectations
4. **Build capacity** - for the development of national engineering education systems to comply with agreed standards
5. **Build capacity** - for the development of systems for the accreditation and regulation of engineering education and professional credentials, including training and governance for professional engineering institutions
6. **Support multilateral mutual recognition** - of national and international accords and agreements – for recognition of qualifications and professional credentials of experienced engineers and to facilitate their mobility to move to locations where there is a demand for engineers
7. **Develop strong relationships with government and policy makers**—to address policies relating to engineers and engineering
8. **Liase with governments** – to establish consistent regulation policies for engineers

9. **Establish international projects to advance sustainable development for engineers and engineering** - led by the WFEO Standing Technical Committees

10. **Report on progress** - to UNESCO and other international organisations

5.4 Thematic Analysis

This reports has a focus on progress being made to advance Goals 4, 13, 16 and 17 which are part of the focus for the HLPF meeting in 2019:

- **SDG 4 – Education**, is an important focus area as a constant theme is the need for quality education in engineering and to build capacity for engineers around the world.
- **SDG 10 – Reduce Inequality** – especially as it relates to women and girls is a major focus area
- **SDG 13 – Climate Change**, is another major focus area as engineers have an important role in developing practices for sustainable engineering technologies and for mitigating the impacts of climate change.
- **SDG 16 – Governance** of organisations is important in the context of engineering especially to eliminate bribery and corruption in infrastructure projects. These consume valuable funding which could otherwise be used to develop valuable infrastructure, especially in developing countries.
- **SDG 17 – Partnerships** between international engineering organisations to facilitate the progress of specific objectives, especially to build capacity in engineering in countries where engineers are needed most.

A summary on progress that has been made is provided in Section 9.

6. Means of Implementation

The **WFEO Engineering 2030 Plan** was communicated widely with the stakeholders of the Federation via websites, newsletters, presentations at meetings and a range of documents. that including: The WFEO website was redesigned with a focus on the work being done with respect to the UN Sustainable Goals, for example, see:

<https://www.wfeo.org/wfeo-and-un-sdgs/#goal4>

Partnerships were forged with a number of international organisations including:

- the **International Science Council** which is the Co-Chair of the Science and Technological Community Major Group ~~on Science Technology and Innovation~~ with

WFEO. The partnership facilitates the development of specific practice guidelines and policy frameworks in important and emerging areas of technology such as artificial intelligence and the responsible use of data;

- Support and facilitate the work of the WFEO national and international members in assisting education institutions achieving the required standards in engineering education and professional development, to develop the capacity for engineers, for example, the work of *FEIAP – Federation of Engineering Institutions in Asia and the Pacific*, an international member of WFEO and the work of *International Federation of Engineering Education Societies (IFEES)*, a partner of WFEO;
- Extend the reach of multilateral recognition of engineering education and professional development of engineers through partnership with the *International Engineering Alliance (IEA)*, a partner of WFEO;
- Support and facilitate professional training to support engineers throughout their careers, such as the training and development programs provided by *FIDIC – Federation of International Consulting Organisations*, a partner of WFEO;
- Develop international frameworks and strategies to address diversity in engineering through joint projects with WFEO Standing Technical Committee on Women in Engineering, national members and the partnership with the *International Network of Women Engineers and Scientists (INWES)*;
- Capacity Building projects in professional engineering institutions in Sub-Saharan Africa by WFEO members and international partners;
- Facilitate the work being done to encourage of girls into STEM careers by WFEO associate *WomEng, South Africa*;
- Address anti-corruption in engineering, through the WFEO Standing Technical Committee on Anti-Corruption and collaboration with the *OECD, Global Infrastructure Anti-Corruption Centre, U.K. and the World Justice Project*;
- Capacity development activities by the Category II UNESCO body – *International Scientific Technology and Innovation Centre (ISTIC)*, based in Malaysia and by other bodies in Africa and the Americas;
- Engineering education programs development by UNESCO Category II *Centre the International centre for Engineering Education (ICEE)*, based in Tsinghua University, Beijing, including the use of technology to support engineering education.

6.1 Engaging civil society – World Engineering Day for Sustainable Development

WFEO has led the proposal to declare 4th March as *World Engineering Day for Sustainable Development*. This was approved unanimously by the UNESCO Executive Board in April

2019. This is an example of partnerships in the engineering community in action, working towards a common goal.

The Declaration will be an opportunity to create awareness of the importance of engineering to modern life and the significant impact of engineering on the well-being, social and economic development of the people of the world.

It will be an opportunity to celebrate and inform government and society on the importance of engineering in achieving the UN Sustainable Development Goals.

80 national and international institutions provided formal letters of support, representing more than 22 million engineers. Women engineering networks in particular provided letters of support on the positive impact such a Day would have on encouraging women and girls to consider careers in engineering. Young people are also enthusiastic about the declaration of the Day as it will provide an opportunity to encourage boys and girls to consider careers in engineering. **Letters of support received by WFEO indicate the impact of the declaration of the World Engineering Day would exceed 2 billion people**

The proposal was supported by more than 40 member nations including:

Namibia, China, Tanzania, Mozambique, Gambia, Equatorial Guinea, Zimbabwe, Palestine, Egypt, Tunisia, Uruguay, Senegal, Liberia, Nigeria, Turkey, Madagascar, Dominican Republic, Guatemala, Mali, Iraq, Gabon, Cote d’Ivoire, Ethiopia, Serbia, Saudi Arabia, Islamic Republic of Pakistan, Russian Federation, Poland, Kenya, Iran, Nicaragua, Oman, Bangladesh, France, Comoros Islands, Liberia, Jordan, Philippines, UK and many others from every continent of the world.

7. Forms of Reports

Progress has been reported annually, the first reports was issued in October 2018, see https://www.wfeo.org/wp-content/uploads/un/WFEO-ENgg-Plan_final.pdf

This report presents the projects that have been established by WFEO, its national and international members and its international partners to advance sustainable development during 2017-18 and presented at the Global Engineering Congress jointly hosted by WFEO and the Institution of Civil Engineers, U.K. and held in London in October 2018. They demonstrate the diversity of projects geographically, technologically and in addressing a wide range of the UN Sustainable goals.

They represent the power of the WFEO network and its partnerships and show case projects from WFEO.

8. Summary of Progress to date

A Summary of the Progress to date by SDG is provided below.

SDG 4 – Education

Projects that advance the UN SDG 4 – Education as it relates to engineering education standards and capacity building are described below:

- Review and Develop Standards for Engineering Education to meet current and future needs of industry and society and for sustainable development in partnership with the *International Federation of Engineering Education Societies (IFEES) and the Global Engineering Deans Council (GEDC), International Engineering Alliance (IEA), the International Centre for Engineering Education (ICEE)*;
- Build Capacity for Engineering Education Systems, accreditation and registration to meet the needs for engineers around the world with the organisations listed above, to ensure the requisite number of engineers are available in countries most in need.
- The WFEO national member from Fiji and engineers in the South Pacific region are also driving the quality and benchmarking of engineering education at tertiary institutions in the South Pacific. In April of 2016, the regional university, The University of the South Pacific, based in Suva Fiji, obtained its accreditation to the International Engineering Alliance standard for professional engineers (Washington Accord) for its Bachelor of Engineering, Electrical and Mechanical programmes. Such projects will ensure the number and quality of engineers educated in Fiji and which will serve the needs of the nation for sustainable development. Unitech based in Papua New Guinea, is also being supported to develop string educational institutions for engineering qualifications that meet international standards through WFEO’s partner, the International Engineering Alliance. It can take several years to achieve the objectives of recognition under the international standards.

SDG 10 – Reduce Global Inequality, especially for women and girls

Projects that advance the UN SDG 10 – Reduce Inequality especially as it relates to women and girls are described below:

- WFEO Associate WomEng, South Africa was established in 2006 with the objective of encouraging girls to consider STEM as a career by creating STEM awareness for girls and developing, mentoring and supporting them through their engineering journey. The model for extending the reach of STEM awareness to 1 million girls is based on a train-the-trainer model who can sign up for a #1MillionGirlsInSTEM toolkit. The reach is tracked on a live Google Map showcasing the number of countries, cities and girls reached. The project is supported by the members of WFEO and the WFEO Women in Engineering Committee.

SDG 13 – Climate Change

Projects that advance the UN SDG 13 – Climate Change as it relates to mitigating the impacts of natural disasters are described below:

- The WFEO Standing Technical Committee on Engineering and the Environment (CEE) developed the WFEO Model Code of Practice for Sustainable Development and published it in 2013.⁴
- WFEO Standing Technical Committee on Engineering and Innovative Technologies is collaborating with the members of WFEO to develop technologies to monitor seismic risk. Earthquake is a major natural disaster risk that threatens human life and property. Improving the capacity of earthquake prediction is urgently needed for sustainable development and in turn requires international collaboration and technical innovation. WFEO is the international platform addressing issues of concerns to the public and the profession with engineering and technologies, and can unite engineers, scientists and research institutes from its members all over the world. The International Meridian Circle Project (IMCP) will establish a global network of earthquake monitoring based not only on the earth but also in space, by utilizing satellite on the orbit of International Meridian Circle (IMC), a circular orbit combining the 120°E meridian with 60°W meridian. Furthermore, this global monitoring system could integrate the sensing data on the earth and from space, combining the given earthquake monitoring technology with innovative technologies, such as satellite remote sensing, Internet of Things (IoT) and Big Data, to acquire unprecedented ability to the monitoring of earthquake on a global scale.
- The World Council of Civil Engineers, a member of WFEO, in collaboration with the United Nations Office in Spain and Aquae Foundation under the aegis 2005 - 2015 International Water Decade have agreed to publish a series of monographs under the topics chosen annually to commemorate the "International Year of Water" declared by the UN in the 2013-2015 triennium, which was later extended until 2017. An outcome of this project was the establishment of a technical Working Group in WFEO to progress the UN SDG 6 and 13. The Institution of Engineers Spain (IIE), the Order of Engineers Portugal (Ode) and the World Council of Civil Engineers are leading the Working Group on Water. They are members of WFEO and have an active partnership which has been used to develop strategies and programmes to address the severe drought in the Iberian Peninsula as a result of climate change and to develop sustainable solutions to integrated water management.
- The WFEO national member for Fiji has a number of capacity building projects to improve the standard of building construction for resilience against natural disasters. The South Pacific and the Small Island Developing States (SIDS) are low in human population, widely spread out and geographically remote from the rest of the world. In the global context, normally it is easily forgotten and left out. Nonetheless, the impact of Climate Change and frequent natural disasters such as tropical cyclones and floods

⁴ WFEO Model Code of Practice for Sustainable Development and Environmental Stewardship
https://www.wfeo.org/wp-content/uploads/code-of-practice/WFEOModelCodePractice_SusDevEnvStewardship_One_Page_Publication_Draft_en_oct_2013-3.pdf

produce serious financial and social setbacks on the SIDS fragile economy. Therefore, building sustainable infrastructure and resilience to natural disasters” is essential for sustainable development. Over the years the engineering leadership in Fiji has identified the key partners in order to progress the relevant SDG’s. It has built a strong relationship and identity with the national governments, academia, infrastructure owners and asset managers, national disaster management office, private sector; particularly the business community and the development partners.

- The WFEO Committee on Disaster Risk Management, hosted by the Peruvian Association of Professional Engineers will lead this project that has the objective of providing early warning to flood event following extreme rainfall to millions living in the city of Piura, Peru. It addresses the impacts of climate change and uses engineering to build resilience against natural disasters for a sustainable city. The project involves collaboration of engineers across Peru and will include the development of hydrological models comprising historical precipitation data from satellites and stream flow data. A high resolution meteorological model will be developed to forecast climate conditions up to 10 days in advance. This provides time to organise response and protect the population. The community will be encouraged to develop specific response plans. The project draws on international experience for responses to river flooding including the Mississippi and the outcomes will be used to address river flooding in other area including the Rimac river basin in Peru.

SDG 16 – Governance

Projects that advance the UN SDG 16 – Governance as it relates to developing strong and ethical institutions are described below:

- The WFEO Committee on Anti-Corruption has a vision is to promote zero tolerance to corruption. This will reduce corruption in engineering projects and practice through the enforcement of sound management systems and ethical professional practice. The Committee seeks to execute thematic, results-oriented programs that raises ethics and corruption prevention awareness and increases the understanding of the global, regional, engineering and policy issues and solutions for the combating of corruption to induce transparency in infrastructure and other vital services. It is developing training programs in collaboration with other WFEO partners including *FIDIC, OECD and the Global Infrastructure Anti-Corruption Centre (GIACC)*.

SDG 17 – Partnerships

The WFEO Engineering 2030 Plan has been developed as a partnership model. The partners and objectives of this Plan have been described in earlier sections.

Advancing the United Nations 2030 Agenda – Other Projects

Many other projects are in progress and include:

1. WFEO Committee on Disaster Risk Management – capacity building for earthquake and water related natural disasters and on-line database of engineering information to mitigating these risks
2. WFEO Committee on Engineering Education – biennial conferences on engineering education and publication of IDEAS journal
3. WFEO Committee on Information and Communication – international seminars on implementation of technologies for Smart Cities and the Internet of Things and publication on monographs on the implementation of information technology in health care and Industry 4.0 technologies.
4. WFEO Committee on Energy – international World Energy Forum and publication on solar energy to facilitate the implementation of new technologies in energy
5. WFEO Committee on Capacity Building – facilitation of capacity building in engineering including Africa Engineering Week, held annually and focussing on developing engineering capacity in Africa
6. WFEO Committee on the Environment – Codes of Practice for Sustainable Development and environmental Stewardship for Engineers and Principles of Climate Change Adaptation for Engineers and participation in the UN Conference of Parties (COP) events on engineering approaches to climate change mitigation and adaptation
7. WFEO Committee on Engineering Innovative Technologies – international conferences and seminars on artificial intelligence, use of innovative technologies, robotics and cloud computing
8. WFEO Committee for Women in Engineering – survey on the status of women engineers in Africa and work on improving sanitation for women in Africa
9. WFEO Committee on Anti-Corruption – contribution to the ISO 37001 Anti Bribery Standard, ongoing participation in the ISO technical committee and development of training materials
10. WFEO Young Engineers/Future Leaders Committee in supporting young engineers in their roles to advance sustainable development including the inaugural Young Engineers Competition held in 2018.

Detailed reports on committee activities on advancing the UN Sustainable Development Goals will be presented as part of the WFEO Biennial Report for the WFEO General Assembly in Melbourne in November 2019.

9. Next Steps

WFEO has developed a clear vision and plan of action to advance the UN Sustainable Development Goals through engineering. The work has just begun and we anticipate that the

current projects will continue to grow and expand across geographic regions and new projects will be developed. WFEO will continue to work with its members and partners to achieve these Goals. Civil Society will be engaged on an ongoing basis through World Engineering Day for Sustainable Development which will underpin efforts to promote the work of engineers for sustainable development and encourage young people, including girls to consider engineering as a career.

10. Conclusion

The WFEO Engineering 2030 Plan draws together the global engineering profession in a unified purpose to advance the UN Sustainable Goals. Much has been learnt in setting up the projects and in the reporting framework. In future years we expect to engage further with member states so that the projects of WFEO are more closely aligned with national policies and frameworks to advance the 2030 Agenda.

Annex 1: The Paris Declaration: Advancing the UN Sustainable Development Goals through Engineering, 7 March 2018

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

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

Considering that:

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

Accordingly, we declare:

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

Signed in Paris, 7 March 2018

Dr. Marlene Kanga AM
WFEO President

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

