



Input from the WFEO Committee on Anticorruption to the UNESCO Forum on

Which Education Goals for Tomorrow's Citizens of the World: Is Quality Enough?

Introduction

- This Presentation gives the Back-ground to Engineering training and education in the World. It proposes a Professional Card for Engineers to be accredited by UNESCO via its WFEO Alliance Network of National Members.
- It will give UNESCO an insight into the BUILT Environment professions so as to empower member Countries to competently craft strategies to advise their Ministries of Higher & Tertiary Education to build sustainable Human Capital capacity in Engineering to make the World a Sustainable place to live in.
- It will propose the teaching of Ethics, Professional Conduct, Sustainability and Climate Mitigation as additional component to the Engineering Curricula.

Background

- Africa has the largest percentage of young people in the world, with over sixty per cent of the population aged between 15 and 25 years old.
- The activities in infrastructure, Construction and Engineering Industry is the barometer of any development in any economy as it contributes massively to the GDP of countries through building projects and maintenance
- UNESCO must now prioritize its focus on Engineering Development and Training as a pre-requisite to influence development in the World.
- *Sustainable engineering infrastructure and services are the basic cornerstones of life, civilization and economic wellbeing of communities and the education systems must now focus quality, ethics and sustainable environmental education.*
- *Across the world, there is a huge deficiency in capacity to understand the need for, how to develop, deliver, maintain and care for infrastructure and services.*

Education, Training and Labour Developments in the Sector

- *Engineering professionals are the custodians of infrastructure construction and maintenance and must be trained/ groomed and educated :*
-
- to facilitate and enhance the knowledge of not only themselves to deal with the challenges of our times, but also to assist decision makers from all levels of society, from the small children to the leaders of countries to ensure a sustainable world for all,
- to be ethical and conduct themselves professionally,
- to be up-to date with the rapidly changing technology,
- to design infrastructure that is environmentally friendly, easy to maintain and sustainable to the end users .

The Journey going forward for the Sector: The need . . .

“Let me challenge all of you to help mobilize global science and technology to tackle the interlocking crises of hunger, disease, environmental degradation and conflict that are holding back the developing world.”

Kofi Annan, UN Secretary General - 2002

The need . . .

“We need to encourage international commitments to promote the kind of engineering and technology that contributes to lasting development around the world.”

Koïchiro Matsuura, UNESCO Director General - 2000

UN Millennium Development Goals – and the migration to the Sustainable Development Goals Challenges for engineers

- In Developing Countries Several of the development goals outlined in the Millennium Declaration have not been met hence amplifying this call to action by WFEO to revisit the MDGs to:
 - Ensure environmental sustainability -- reduce by half the proportion of people without sustainable access to safe drinking water
 - Eradicate extreme poverty ... -- reduce by half the number of people living on less than a dollar a day
 - Develop a global partnership for development -- in cooperation with the private sector, make available the benefits of new technologies—especially information and communications technologies.

21st century challenges were described as “The Perfect Storm...” by Prof Sir John Beddington Chief Scientific advisor to the UK Government.

These are grouped as:

- Infectious diseases
- Biodiversity
- Climate change
- Water demand
- Urbanization
- Population
- Food security
- Poverty alleviation
- Energy demand
- Corruption

We advocate education systems that promote solutions to the above woes the world is facing.

The Imperative to Innovate and Add Value to our Natural Resources and Heritages is a strategic policy objective WFEO Should Consider as relevant to our contribution to UNESCO:

- High-quality and pertinent technical education, and quality-assurance mechanisms are imperatives for creating a knowledge-based economy.
- Engineering Capacity Development must respond to local challenges as well as global opportunities. e.g. We need to create key competencies of a high calibre of professionals in Engineering through the creation of a framework to give professional accreditation of Engineering Degrees using the UNESCO seal of approval together with that of WFEO and the national member.
- Quality-assurance systems with peer-review accreditation must be present in WFEO and UNESCO to promote high-quality Engineering Training and Practice that make Professional portable to other parts of the region and of the world.

The Imperative to Innovate and Add Value to our Exports

- Quality-assurance systems can provide the basis for cross-border recognition systems, permitting the flow of services and goods across national boundaries and creating a net 'brain gain' for the country or region.
- To innovate and reform engineering, a country need to understand what an engineer and/or a technician is, and what skills and competencies s/he must possess.
- Their education and professional development is not only about knowledge, but also about skills, ethics, values, business entrepreneurship and other competencies. Engineers face problems and solve problems as a way of life.
- Laws and Regulations should be set to ban the export of Africa's Raw Materials with quotas for the % value to be added to specific products

The Imperative to Innovate and Reform Engineering Education

- Engineers must not only be knowledgeable about science and technology but also have the skills, competencies and values to address problems and opportunities in effective and creative ways.
- Engineering plays a central role in our increasingly technology-based societies.
- The education of engineers must prepare them for the multi-disciplinary nature of the problems they will face. We need the soft skills as well

Technical Capacity Building to Promote Economic Development

“Give a person a fish: you have fed them for today. Teach a person to fish: you have fed them for a lifetime.”

And: teach them how to process and package fish for export, and you have stimulated economic development.

Policy issues are: Make our education system entrepreneurial, productive and practical to allow graduates to create wealth and develop World.

What Would Work?

- Two areas that will likely lead to the desired economic growth in the World leading to economic self-sufficiency are:
 - Accreditation of Degrees and Diplomas that offer utilization of advanced technologies through education that leads to high skills in technological areas via UNESCO and WFEO and National members

and

- University, Industry and Academia linkage strategies to create joint patents, research innovation and development programs and Industrial attachments (both students and lecturers) and having renowned industrialists teach at colleges.

Recommendations and Call for Action for UNESCO and WFEO

Countries that want to develop their technological Capacity in order to be knowledge-based economies must focus on four areas:

- **Quality Engineering, Architectural and Real Estate Education and training**--an educated and skilled population
- **Information infrastructure**--a dynamic information infrastructure--ranging from radio to the Internet and other ICT services like GPS, GIS, Nano and other -technologies
- **Economic incentive and institutional regime**--a regulatory and economic environment that enables the free flow of knowledge, supports investment in Information and Communications Technology (ICT) and encourages entrepreneurship.
- **Innovation systems**--a network of research centers, universities, think tanks, private enterprises and community groups that can tap into the growing stock of global knowledge, assimilate and adapt it to local needs, and create new knowledge.

Recommendations and Call for Action for WFEO to advise UNESCO:

WFEO Should:

Create common structures and platforms for (which take into account local conditions and peculiarities):

- Common CPD courses and outreach programs Ethics, Anti-corruption and professionalism as well as Technical Courses.
- A unified Qualification framework through joint accreditation of degrees, diplomas and courses.
- Unified Standards and technical compliance systems
- Unified Engineering licensing and regulatory regime

Conclusion

- This is the time to **re-engineer education and training systems for sustainable socio-economic development** in Engineering, Construction and Services Industry.
- Now is the time...
 - to unleash the skills of our engineers and technicians for them to:
 - deliver the UN Millennium Development Goals the forthcoming Sustainable Development Goals
 - build an engineering technological win-win partnership within our borders and internationally through UNESCO
 - build and maintain critical infrastructure for our countries