33rd Conference of the ASEAN Federation of Engineering Organisations

(CAFEO 33)

The Penang Declaration

From Light to Bytes: ASEAN Engineering Evolution and Future Challenges

23-26 November 2015 Penang, Malaysia

We, the Engineers representing the ten (10) national engineering organisations in ASEAN namely:

Pertubuhan Ukur, Jurutera dan Arkitek (PUJA), Brunei;
Board of Engineers Cambodia (BEC), Cambodia;
Persatuan Insinyur Indonesia (PII), Indonesia;
Lao Union of Science and Engineering Associations (LUSEA), Laos;
The Institution of Engineers, Malaysia (IEM), Malaysia;
Myanmar Engineering Society (MES), Myanmar;
Philippine Technological Council (PTC), Philippines;
The Institution of Engineers, Singapore (IES), Singapore;
The Engineering Institute of Thailand under the King's Patronage (EIT), Thailand; and
Vietnam Union of Science & Technology Associations (VUSTA), Vietnam

have assembled in Penang, Malaysia from 23 – 26 November 2015 for the **33rd Conference of the ASEAN Federation of Engineering Organisations (CAFEO 33) under the theme *"From Light to Bytes : ASEAN Engineering Evolution and Future Challenges".***

We have discussed during the Conference areas of common interest amongst others, pertaining to integrated public transportation system in urban development; development in the mechanical, electrical and electronic sectors; state of art in information and communication technology; energy management with particular reference to energy efficiency and renewable energy; sustainable infrastructure; the trend in chemical and environmental engineering; impact of climate change; risk management of natural disaster; standard of engineering education; the increasing role of woman engineers in the nation development; and the need for continuous capacity building for the young engineers.

The objective of CAFEO 33 was very similar to that of previous CAFEO which was to create awareness and understanding on the importance of finding solutions to issues related to energy, transportation, environment, sustainable cities and infrastructure, and the enhancement of engineering education in ASEAN member countries. The new millennium would require the necessary reforms to the engineering institutions of higher learning and the general education system. CAFEO

32 had attained a milestone as it has brought together national engineering organisations, engineers, academicians, technopreneurs and experts that represent at least 20 over million engineers from Asia and the Pacific to share and exchange information on ways to overcome the above issues with the emphasis on the need for more skillful training of the professional engineers. CAFEO 33 further enhanced this effort and has brought in participants from the South-South Countries of Africa such as Tanzania and Nigeria for the first time in the history of CAFEO.

NOTING that the AFEO Governing Board at their meeting in Yangon, Myanmar on 12th November 2014 had laid down the following global challenges in

- promoting greater public welfare, safety, health, environment and sustainable development; developing engineering capabilities in ASEAN;
- providing more competitive engineering services and products;
- advancing collective views on enhancing two-way mobility in engineering practices beyond the ASEAN region,

and have declared that the ASEAN Engineers of today and tomorrow must be more competitive; have the initiative to promote the branding of the professional engineering services, possess universal skill for international mobility and be creative, innovative and market ready; as well as having high moral fiber, ethics and integrity.

RECALLING that there is a need for a good integrated education system to accelerate the achievement of these goals; with more "society-conscious" engineers who are able to understand how their work interacts with society and the environment, locally and globally, in order to identify potential challenges, risks and impacts; and able to participate actively in the discussion in pertaining to national economic, social and technological policies in order to redirect society towards sustainable development and apply professional knowledge according to universal values and code of practice.

MINDFUL that good engineering education is important for the development of engineering graduates so as to promote good practices, dedication and etiquette among young engineers, there must be greater understanding of the importance of the accreditation system for engineering education for nation-building and the need to streamline qualifications to an acceptable level recognised by all within ASEAN and internationally. AFEO appreciates that each member economy within ASEAN has different economy scenarios and different stages of development and thus has achieved different levels of engineering education standards. The different development stages of each ASEAN country would create major challenges in reaching a level that is internationally recognised and acceptable. Education background and qualifications must be universally accepted and benchmarked to an agreed standard. In this respect AFEO is taking note that FEIAP's Engineering Education Guidelines incorporates an accreditation system model framework and is adaptive to the needs of its members. The model framework will guide the development of an engineering programme accreditation system that focuses on

delivery of assured graduate outcomes appropriate to a particular economy at a particular stage in development.

For this AFEO is

HEEDFUL that our current development model poses significant challenges when it comes to achieving a more just society based on a benchmarking standard to a level accepted as "reasonable practice" resulting in the improved performance of the higher education institution or programme which can be recognised as the best by other peers and give greater solidarity towards different cultures and future generations;

AWARE that the world and its cultures need a different kind of engineer – the "UNIVERSAL PROFESSIONAL ENGINEER" - one who is visionary, systemic approach to decision-making, one who is guided by ethics, justice, integrity, equality and solidarity, and has a holistic understanding that goes beyond his or her own field of specialisation; one who is acceptable the world over;

FURTHER NOTING that the world in which we live today has become complex and is facing severe challenges; that the environment continues to deteriorate; that there are more frequent and devastating natural and man-made disasters;

CONSCIOUS that natural resources are depicting and engineers have a vital role to play in facing today's challenges, for building a better world and essential for achieving sustainable development and social progress; maintain social cohesion, reduce poverty and promote peace and understanding;

RECOGNISING that our current development model poses significant challenges when it comes to achieving a more just society based on the respect for nature and human rights, and demands a fairer economy and greater solidarity towards different cultures and future generations;

Besides the foresaid ASEAN flagship project, ASEAN will in due course implement the ICT infrastructure in support of the e-ASEAN project and other forms of pan-ASEAN infrastructures and facilities, transportation, energy, water and others that will need much Science, Engineering and Technologists (S.E.T.) inputs;

PROPOSING to enhance networking, collaborations among the AFEO member organisations in sectors which have evolved into a very dynamic industry through the ages, particularly in the fields of Manufacturing, Engineering Education, Infrastructure Development and Engineering Mobility through the following actions:

A. Manufacturing Sector

i) To establish a network within AFEO member organisations to promote the sharing of experience and knowledge in developing and transforming the manufacturing sector starting with the electronic and digital industries;

ii) To encourage mutual collaboration to promote entrepreneurship and business startup in high technology software applications and internet through the setting up of fund, accelerator and co-working space;

iii) To initiate collaboration between industry and university to expose undergraduate students to get early exposure to the industry's need of electronic based engineering resources.

B. Engineering Education

i) To accelerate the collaboration and develop steering committee to promote STEM (Science, Technology, Engineering and Mathematics) in education to increase enrollment in science and engineering stream in schools and universities;

ii) To consistently promote a sustainable development through good engineering practices in the engineering education system;

iii) To ensure that engineering education includes scope for addressing regional engineering issues via innovative engineering and sound technological solutions.

C. Infrastructure Development

i) To promote the notion that the Engineer should be the steward of the natural environment and its resources;

ii) To ensure that the Engineer would be able to manage professionally the risk and uncertainty caused by natural disasters, accidents and other threats;

iii) To acknowledge that engineer should be the prime mover and leader in discussions and should make decisions on shaping the national development, infrastructure and environmental policies;

iv) To ensure that Engineer be given full responsibility and involvement in planning, designing and implementing all infrastructures;

v) To remind that the Engineer should be sensitive to the environmental impact for the implementation of any infrastructure works including engineered hill-site developments.

E) **Mobility of Engineers**

i) To promote the practice of engineering services across national boundaries;

ii) To establish the Engineering Mobility Forum with the aim of assisting and facilitating the movement of services and engineering community within the ASEAN region;

iii) To promote a common standard of engineering practices and globally recognised professional competency for engineers.

WE at CAFEO 33 therefore RESOLVE THAT there is an urgent need: -

- To secure the recognition of ASEAN engineering titles and to protect these titles, in order to facilitate mobility of engineers to move and practice within and outside ASEAN;

- To ensure high standards of engineering professional practices and to regularly review them;

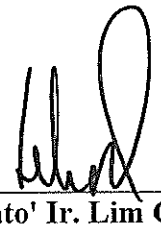
- To promote cultural and professional links among members of the engineering fraternity within ASEAN;

- To support each country's national role in enhancing the peace, prosperity and quality of life of all the people of ASEAN.

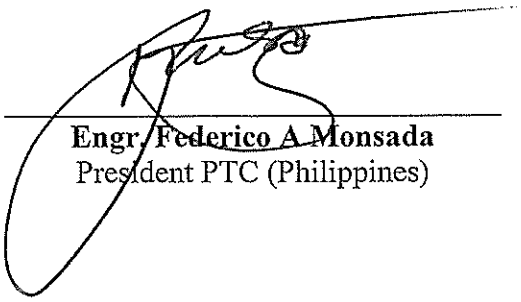
And for that the ASEAN Engineers of today and tomorrow pledge to:

- Possess universal skill and competency for regional and international mobility;
- Be creative, innovative, and market ready;
- Have high moral fibre, ethics and integrity;
- Adapt their design and work to address the issues of sustainability, resource utilisation efficiency, pollution prevention and waste management;
- Be more "society-conscious" by understanding how their work interacts with society and the environment, locally and globally, in order to identify potential challenges, risks and impacts;
- Participate actively in the discussion in national socio-economic development, and technological policies, to help redirect society towards sustainable development; and
- Apply engineering knowledge according to universal values and professional ethics.

SO RESOLVED AND AGREED BY:



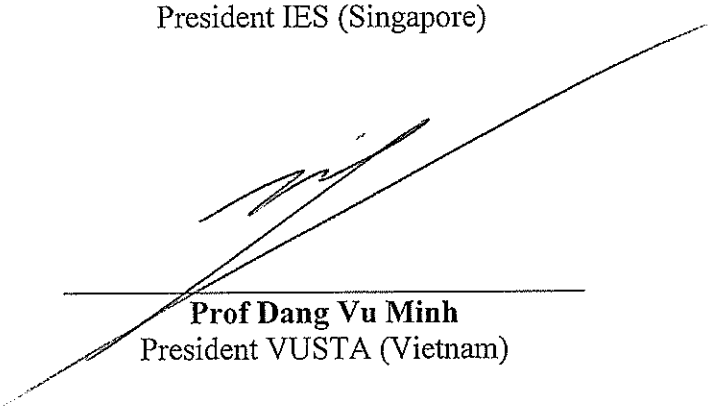
YBhg Dato' Ir. Lim Chow Hock
President IEM (Malaysia)
and concurrently
AFEO Chairman



Engr. Federico A Monsada
President PTC (Philippines)

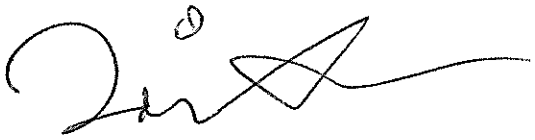
Er Chong Kee Sen
President IES (Singapore)

Prof.Dr.Suchatvee Suwansawat
President EIT (Thailand)



Prof Dang Vu Minh
President VUSTA (Vietnam)

Ir. Somphone Phanousith
for President LUSEA (Lao PDR)



Dato' Paduka Hj Idris Bin Hj Abas
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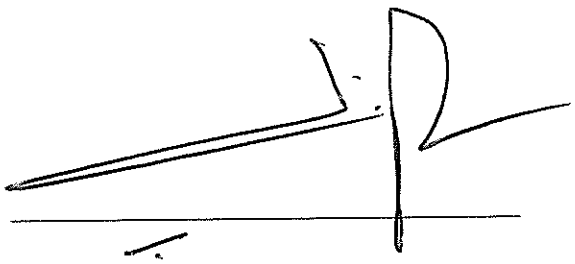

U Win Khaing
President MES (Myanmar)