

Plenary Talk By **Megat Johari MEGAT MOHD NOOR**

United Nations Sustainable Development Goals (UN SDGs) in Engineering Curricula

ABSTRACT

All three accords, the Washington Accord (1989), Sydney Accord (2001) and Dublin Accord (2002) and four agreements, International Professional Engineers Agreement (earlier known as Engineers Mobility Forum) (1997) APEC Engineers Agreement (1999) International Engineering Technologist Agreement (2001) and Agreement for International Engineering Technician (2002) under the then, International Engineering Meetings (IEM) consolidated the graduate attributes and professional competencies into one single document known as Graduate Attributes and Professional Competencies (GAPC). The first version was formally adopted in June 2005. With the formation of the International Engineering Alliance in 2007, a second version of the GAPC was adopted in 2009 and later replaced with Version 2013. Presently, the latest version is 2021. It is expected that all accord signatories to have conducted the gap analysis by June 2026, with full implementation in 2027. All reviews that begin in 2027 would expect the version 2021 to be in place. The document supports the mutual recognition of engineering qualifications and global mobility of engineers under the IEA.

All the GAPCs (2005, 2009, 2013 and 2021) emphasised core technical competencies and generic skills for professional practice. The GAPC 2021, however, explicitly expanded the scope of responsibility towards sustainable development in the context of the United Nations Sustainable Development Goals (UN SDGs) for engineering graduates while retaining the core fundamental attributes and generic skills. These are explicitly considered in the GAPC document through Graduate Attributes (A3 and A6).

The attribute/competency in the design/development of the solution (Graduate Attribute, A3) requires explicit consideration of public health and safety, whole-life cost, net zero carbon, and resource, cultural, societal, and environmental considerations, thereby giving appropriate consideration to the UN SDGs. The attribute/competency for engineers and the world (Graduate Attribute, A6), where knowledge and responsibility towards sustainable development vis-à-vis impacts on the society, economy, health and safety, legal frameworks, and the environment, are expected to be considered.

The Knowledge and Attitude profiles (K) associated with both attributes are natural sciences and social sciences (K1), sustainable concepts that support design and development (K5) and professional responsibility in public safety and sustainable development (K7). The inclusion of K1 implies association with the Graduate Attribute A1.

The presentation will introduce the concept of sustainable development and its impacts. The different levels of education for engineers, engineering technologists and engineering technicians would be covered with a focus on the Washington Accord level of qualification before mapping and expounding on the relevant graduate attributes and knowledge and attitude profiles explicitly considered in the GAPC document. Engineering curricula, apart from needing to demonstrate the core fundamentals and generic skills outcomes, must also be able to demonstrate concern for sustainable development.



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Megat Johari Megat Mohd Noor is a distinguished figure in Malaysia's engineering community. He currently serves as the President of the Malaysian Society for Engineering & Technology (MySET), a Board Member of the Board of Engineers Malaysia (BEM), and the Deputy Chair of the Engineering Technology Accreditation Council (ETAC). He is also the former Chair of the Engineering Accreditation Council (EAC) under BEM.

He played a pivotal role in securing Malaysia's full signatory status under the Washington, Sydney, and Dublin Accords, strengthening the international recognition of Malaysia's engineering qualifications. An accomplished academic, he has published more than 300 papers in the fields of environmental engineering and engineering education.

At the international level, he made history as the first Malaysian appointed as Chair of the Dublin Accord under the International Engineering Alliance (IEA), marking a significant milestone for the nation in global engineering education leadership.