

# **APEC ENGINEER REGISTER, CHALLENGES AND THE WAY FORWARD TO PROMOTE MOBILITY OF ENGINEERING SERVICES**

*By*

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## **1 BACKGROUND**

The Asia Pacific Economic Cooperation Forum (APEC) is the Government consultative organisation of the 21 countries and regions (termed economies) in Asia and on the Pacific Ocean rim. The economies are 1) Canada, 2) USA, 3) Mexico, 4) Peru, 5) Chile, 6) Russia, 7) Republic of Korea, 8) China, 9) Japan, 10) Chinese Taipei, 11) Hong Kong, China 12) Vietnam, 13) Thailand 14) The Philippines 15) Malaysia, 16) Singapore, 17) Brunei, 18) Indonesia, 19) Papua New Guinea 20) Australia, and 21) New Zealand.

The APEC leaders' meeting in 1995 at Osaka agreed to the need of facilitating the mobility of qualified person among the member economies. Consistent with the Osaka Action Agenda, the meeting of 18 member economies of APEC Human Resources Development Ministers (HRD) in Manila in January 1996 urged the acceleration and expansion of project initiatives on mutual recognition of skill qualifications.

The main impetus came after the APEC HRD Working Group, which met in Wellington, New Zealand in January 1996, agreed to Australia's financial sponsorship on the Project focusing on professional engineering accreditation, recognition and development. The main aim is of course to develop Mutual Recognition Arrangement (MRA) to promote trades in services within the APEC region and mobility of engineers.

Eight member economies, Australia, Indonesia, Japan, Republic of Korea, New Zealand, Philippines, Thailand and United States of America, participated in the First Steering Committee Meeting of the Project held in Sydney in May 1996. The meeting agreed to proceed with a comprehensive survey on professional institutions and societies, registration of professional engineers, engineering education and continuing professional development. The results of the survey would form the framework for the best practices in professional engineering accreditation, recognition and development.

The Steering Committee had a number of meetings and workshops to deliberate the formation of APEC Engineer. Malaysia's participation begins in 1997, attending a workshop on APEC Engineer in Manila. At the Final Steering Committee Meeting and Inaugural APEC Engineer Coordinating Committee Meeting held in November 1999, the following founding members were admitted into the coordinating committee: Australia; Canada; Hong Kong, China; Japan; Korea; Malaysia; New Zealand and Thailand. The formal commencement year of the APEC Engineer Register started in 2000.

Currently, 14 of the 21 APEC member economies are authorised to operate APEC Engineers Register.

## **2. OBJECTIVES OF APEC ENGINEER**

APEC Engineer aims to:

- Promote mobility of qualified engineers within APEC through mutual recognition of qualifications and experience based on substantial equivalence of engineering programme satisfying the academic requirements for the practice of engineering at the professional level.
- Establish a strong cooperative network among engineering organisations in APEC member economies, for trade services especially engineering services – growth and efficiency.

### **3. DEFINITION OF APEC ENGINEER**

An APEC Engineer is defined as a person who is recognised as a professional engineer within an APEC Economy, and has satisfied an authorised body in that economy, operating in accordance with the criteria and procedures approved by the APEC Engineer Coordinating Committee. They are required to have:

- Completed an accredited and/or recognised engineering programme
- Been assessed within their own jurisdiction as eligible for independent practice
- Gained a total of at least seven years of practical experience since graduation
- Spent at least two years in responsible charge of significant engineering work
- Maintained their continuing professional development at a satisfactory level

Many of the APEC Economies are now full members of Washington Accord.

All practitioners seeking registration as APEC Engineers must also agree to be bound by the codes of professional conduct established and enforced by their home jurisdiction and by any other jurisdiction within which they are practising. Such codes normally include requirements that practitioners place the health, safety and welfare of the community above their responsibilities to clients and colleagues, practise only within their area of competence, and advise their clients when additional professional assistance becomes necessary in order to implement a programme or project.

APEC Engineers must also agree to be held individually accountable for their actions, both through requirements imposed by the licensing or registering body in the jurisdictions in which they work and through legal processes.

### **4. ROUTE TO BECOME AN APEC ENGINEER**

The route to become an APEC Engineer is to apply through an authorised register of APEC Engineer in an APEC economy. A professional engineer wishes to apply must first be a licensed or certified engineer to practice independently in that APEC Economy.

The APEC economy seeking to operate an authorised APEC Register must gather the representatives from government, industry, relevant professional institutions or associations and higher education institutions delivering engineering programmes and should be recognised as competent by the authorities responsible for registration and licensing within the economy.

A Monitoring Committee will be established to nominate a representative to participate as a non-voting member on the APEC Engineer Coordinating committee that has the ultimate authority for conferring an authorised register in an APEC economy.

The primary objective of the Monitoring Committee will be to develop and maintain a Register of APEC Engineers in compliance with the APEC Engineer Frameworks as shown in **Figure 1**.

The Monitoring Committee established will then draft Assessment Statement in accordance with the APEC Manual (<http://www.ieagreements.com/APEC/Documents/APECEngineerManual.pdf>) and provide a copy of the draft statement to the Secretariat of the APEC Engineer Coordinating Committee for circulation to all the official representatives of authorised APEC Registers. Currently 14 out of 21 APEC economies have authorised APEC Registers and the Secretariat of APEC Engineer is Institution of Professional Engineers New Zealand.

The Assessment Statement will be tabled and considered by the APEC Engineer Coordinating Committee according to the APEC Coordinating Committee Rules.

When approval is granted, the Monitoring Committee will provisionally be authorised to develop and maintain a Register in accordance with the Assessment Statement of Criteria and Procedures. The continued authorisation will be subject to periodical review, currently at an interval of a maximum of six years.

## **5. ASEAN ENGINEERING REGISTRATION (AER) MODEL**

The mobility of engineering services within the ASEAN (10 nations) was initiated by private sector through engineering institutions in ASEAN at a conference of ASEAN Federation of Engineering Organisations (AFEO). It started with ASEAN Architects/Engineers Register and was amended to ASEAN Engineers Register in 1999 to focus and expedite promotion of benchmarking and mobility of engineers. In 2010, it became known as the ASEAN Engineering Register registering the whole engineering team comprises of ASEAN Engineers, ASEAN Engineering Technologists, ASEAN Technicians, Associate ASEAN Engineers, Associate ASEAN Engineering Technologists and Associate ASEAN Technicians (Choo Kok Beng, 2012).

Choo (2012) highlighted that the various titles awarded by the AER give peer recognition for their respective competencies and capabilities. It will accord them the necessary respect, recognition as an accredited technical person. This will enhance their employment prospects and business ventures into other ASEAN countries.

The public sector started to facilitate mobility of engineers in ASEAN after the signing of ASEAN Free Trade Area (AFTA) in 1992. The framework of Mutual Recognition Arrangement (MRA) of Engineering Services to support AFTA was later signed in 2005 which spells out the requirements for cross-border practice of professional engineering consultancy services for various engineering works.

Liberation of trade in services in ASEAN is designed through the mechanism of ASEAN Framework Agreement on Services (AFAS) signed in 1995. The MRA signed by ASEAN government ministers gives authority to Professional Regulatory Authorisation (PRA) of ASEAN Member countries on registration/licensing/certification of practice of engineering and monitoring and assessment of Registered Foreign Professional Engineers (RFPE) to ensure compliance with the MRA. The MRA emphasised collaboration with local Professional Engineers in the host country and subject to their domestic laws and regulations governing the practice of engineering. The objectives of the MRA are:

- a) To enhance cooperation in services amongst Member States in order to improve the efficiency and competitiveness, diversify production capacity and supply and distribution of services of their service suppliers within and outside ASEAN;
- b) To eliminate substantial restrictions to trade in services amongst Member States; and
- c) To liberalise trade in services by expanding the depth and scope of liberalisation beyond those undertaken by Member States under the GATS with the aim to realising a free trade area in services.

The private sector is very active in many institutional activities such as the annual CAFEQ.

## 6. ENGINEERS MOBILITY FORUM

After the biennial meeting of the signatories to the Washington Accord on 27 and 28 October 1997, it was agreed that an independent forum to be known as Engineers Mobility Forum (EMF) to be established to explore mutual recognition for experienced engineers. The final Memorandum of Understanding Agreement to establish and maintain an international register of such engineers was signed at Thornybush in South Africa on 25 June 2001. This included a number of countries in addition to those of the Washington Accord.

To ensure consistency in application of the agreed criteria, ultimate authority for entering persons on the EMF Professional International Register will remain with an International Register Coordinating Committee.

EMF International Professional Engineer Register is essentially the same as APEC Engineer Register. The signatories aim to facilitate cross-border practice by experienced professional engineers by establishing a framework for their recognition based on confidence in the integrity of national assessment systems, secured through continuing mutual inspection and evaluation of those systems.

To grant entry into the EMF International Professional Engineer, an engineer must demonstrate that he/she have:

- Recognised Degree in Engineering substantially equivalent to a degree accredited by an organisation holding full membership of, and acting in accordance with the terms of the Washington Accord
- Assessed in own economy as eligible for independent practice
- Minimum seven years practical experience since graduation
- At least two years in responsible charge of significant engineering work
- Maintained continual professional development at satisfactory level

Currently there are 15 full members and the registered engineers are as shown in **Table 1**. The Provisional member is Bangladesh. Pakistan was awarded interim authorisation to operate an EMF International Professional Engineer register in June 2011.

## 7. CHALLENGES OF THE APEC ENGINEER

The APEC Engineer register has been operating since year 2000. The registered APEC Engineers for each economy at June 2011 is shown in **Figure 2**. The growth for the last 10 years has been slow as shown in **Figure 3**. This number is small in comparison with the total professional engineers in the 21 economies. It is even

smaller if it is compared with the total engineers including young engineers and professional engineers who are not licensed or certified to practice independently in their own economy. One of the criteria to qualify for APEC Engineer is having license International Engineer Register and certificate to practice independently.

When we compare with one benchmarking register such as EMF International Professional which started a year after APEC Engineer, the member of registered engineers in its 15 member economies is only about 60% of the registered APEC Engineers. The growth of it is also shown in **Figure 3** and 14 member economies operate both the APEC Engineers and EMF International Professional engineers registers and most of them are having common monitoring committee members for the register.

In terms of ratio, EMF International Professional register covers areas with much bigger population but has lesser number of registered professional engineers in the register.

Another register was mooted by the active institution or societies of engineers in ASEAN which has 10 economies. Its register was started by AFEO without involvement of licensing or certification bodies for independent practice and has registered 2,040 engineers as at December 2011.

In 2005, the ASEAN economic ministers signed the ASEAN Mutual Recognition Arrangement on Engineering Services formation of ASEAN Chartered Professional Engineer (ACPE). This benchmark register, which is the main part of the Mutual Recognition Arrangement (MRA) is basically adopting the APEC Engineer Model but managed by Professional Regulatory Authority (PRA) in the 10 ASEAN member countries. Those ASEAN member countries without a Licensing board are in the process of setting up their Licensing board.

As at the end of December 2011, some 400 ACPE have been registered. In addition, the MRA specifies collaboration for local professional engineers engineering services. Thus, independent practice of an ACPE from an ASEAN member is not allowed in a host member country.

Realising that majority of the engineering services is through integrated engineering services, AFEO has now introduced the following additional categories of registered engineering support staff:

- i) ASEAN Engineering Technologists (AET)
- ii) ASEAN Technicians (AT)
- iii) Associate ASEAN Engineers (AAE)
- iv) Associate ASEAN Engineering Technologists (AAET)
- v) Associate ASEAN Technicians (AAT)

The mobility of licensed professional engineers is generally small in comparison with the total population of engineers. In the case of Malaysia, the number of professional engineers licensed to practice independently is 10,423 which is less than 15% of the total registered engineers with the Licensing Board, Board of Engineers Malaysia as at April 2012. In Malaysia, the Engineers Act requires all graduate engineers working as engineers to register with the Board. Generally, the trend is also true in the other economies.

*Fajar Hirawan and Wahyu Triwidodo (2011)* have done a survey on the ASEAN MRA and found that many professional engineers do not register themselves in the ACPE Register. The reasons noted are:

- No significant benefit to be registered and become ACPE
- No major difference for them before and after having certification as an ACPE
- Lack of engineers working in destination country and origin country who earned an ACPE
- No clear paths in using the ASEAN certification
- Lack of promotion in the register

Nevertheless, Benchmark Registers are necessary MRA to facilitate mobility of engineers in promoting liberation of trade in services.

The APEC Engineer Register should be promoted as the recognised register in the MRA for bilateral or multilateral trade negotiations between APEC economies. Thus, representatives of APEC Engineer Registers should work with their respective government agencies in charge of trade negotiation to promote APEC Engineer Register as the MRA. This will provide the impetus to expedite trade in engineering services.

The benefits of APEC Engineers include:-

- i) Benchmark of achievement of Professional engineers
- ii) Migration of the imbalance of demand and supply of engineers within countries in the region
- iii) Better use of technology and resources
- iv) Technology transfer
- v) Common code of practice and standard for the regional with national annex to suit each national need and affordability while maintaining the minimum standard of the regional for trade purpose

## 8. THE WAY FORWARD

The way forward to achieve the full potential of the APEC Engineer on mobility of engineers is to integrate benchmarking and trade negotiation through public and private partnership together with the input professional bodies such as Institution of Engineers and licensing or certification board of engineers for practice.

Trade in services includes plant and equipment, products including materials, engineering design and construction management such as Engineering Procurement and Construction Management (EPCM) which is the bulk of the trade while engineering design is a small portion of the total trade in engineering services.

This integrated engineering service is classified under World Trade Organisation (WTO), CPC 86733 while the CPC 68732 covers engineering design services. Consequently, trade in services should include young engineers, technologists and technicians.

The linkage of APEC Engineer with the International Benchmarking bodies and WTO, regional as well national government leaders are shown in **Figure 4**.

Multilateral agreement in regional and International trade organization also encourages the use of bilateral agreement to expedite MRA in the trade negotiation to improve trade in services. The benchmarking register of APEC should be used as the MRA for the trade in within APEC economic.

The statistics in **Figure 3** show that the number of registered engineers in APEC is much higher than the EMF International Professional Engineers. The main reason to this is the involvement of APEC Economic Ministers in the APEC Engineer.

In fact, the benchmarking of the APEC Engineer was mooted by APEC Human Resources Development Ministers (HRD) in Manila in January 1996 urging the acceleration and expansion of mutual recognition of skill qualifications to facilitate trade within the region.

Trade within the 21 economies of APEC will of course complement the initiative of World Trade Organisation (WTO) in liberalising world trade.

Bear in mind that the code of practice and standard as well as quality of engineering plant and equipment should achieve a minimum standard for cross-border trade. Nevertheless, the need and affordability within an economy could vary from the economies in the regions.

Continuous promotions of APEC Engineer Register through various national, regional and international activities as well as harmonisation of engineering education accords and registers are needed. This will promote better use of resources in assessment of standards, monitoring and review of accords and registers.

### **References:-**

**Choo K.B. (2012)**, "The ASEAN Engineering Community in 2015", 2<sup>nd</sup> Engineering Summit, Manila, Philippines

**Fajar B. Hirawan & Wahyu Triwidodo (2012)**, "Examining the ASEAN Mutual Recognition Arrangement (MRA) Implementation Process on Engineering and Architectural Services and Its Impact to the Professionals: Indonesian Perspective", Structural Reform, Services and Logistics - Building Policy Making Capacity in APEC/Services Workshop 2012, Jakarta, Indonesia

**<http://www.aseansec.org>**

# ROUTE TO BECOME AN APEC ENGINEER

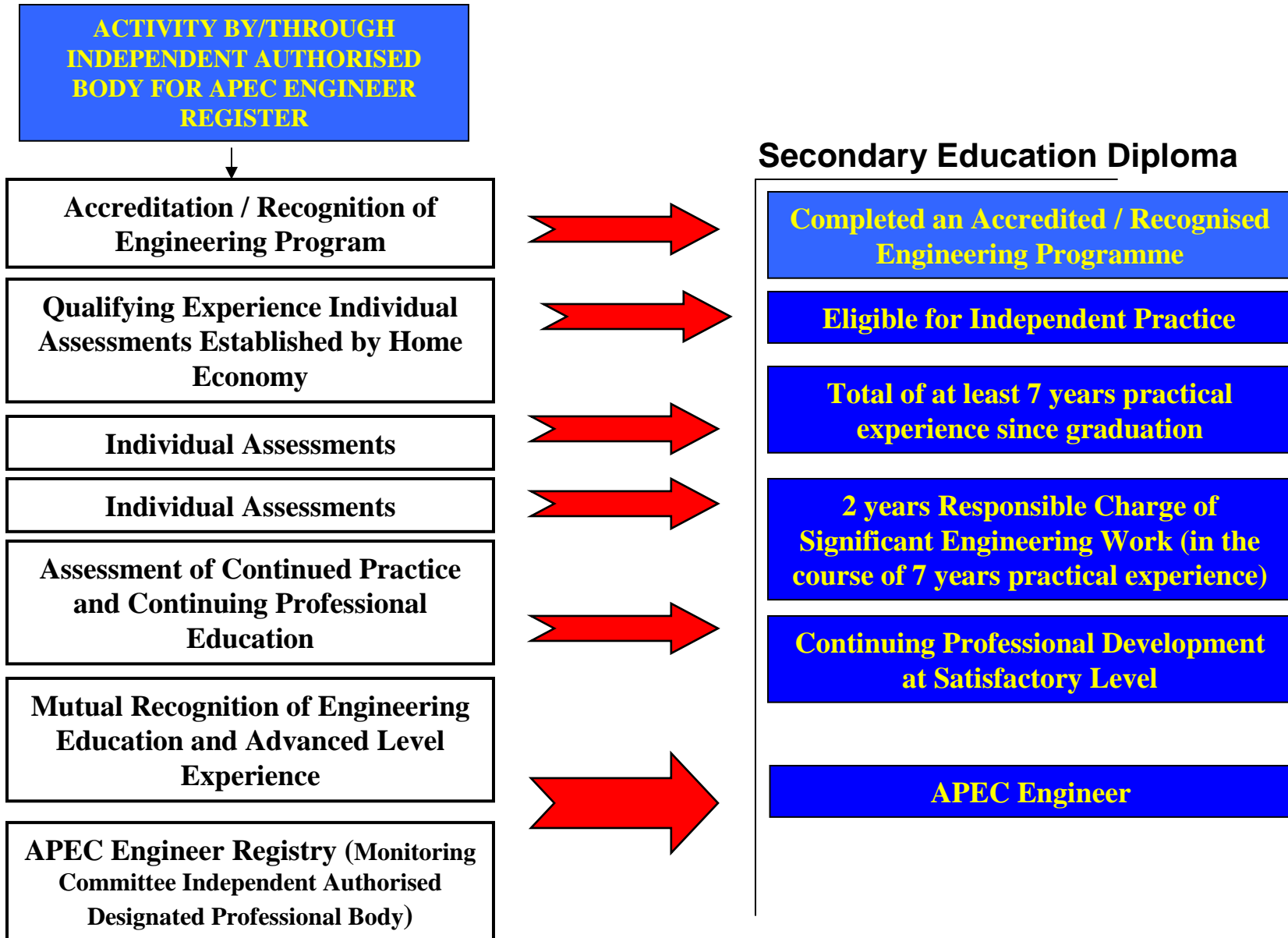
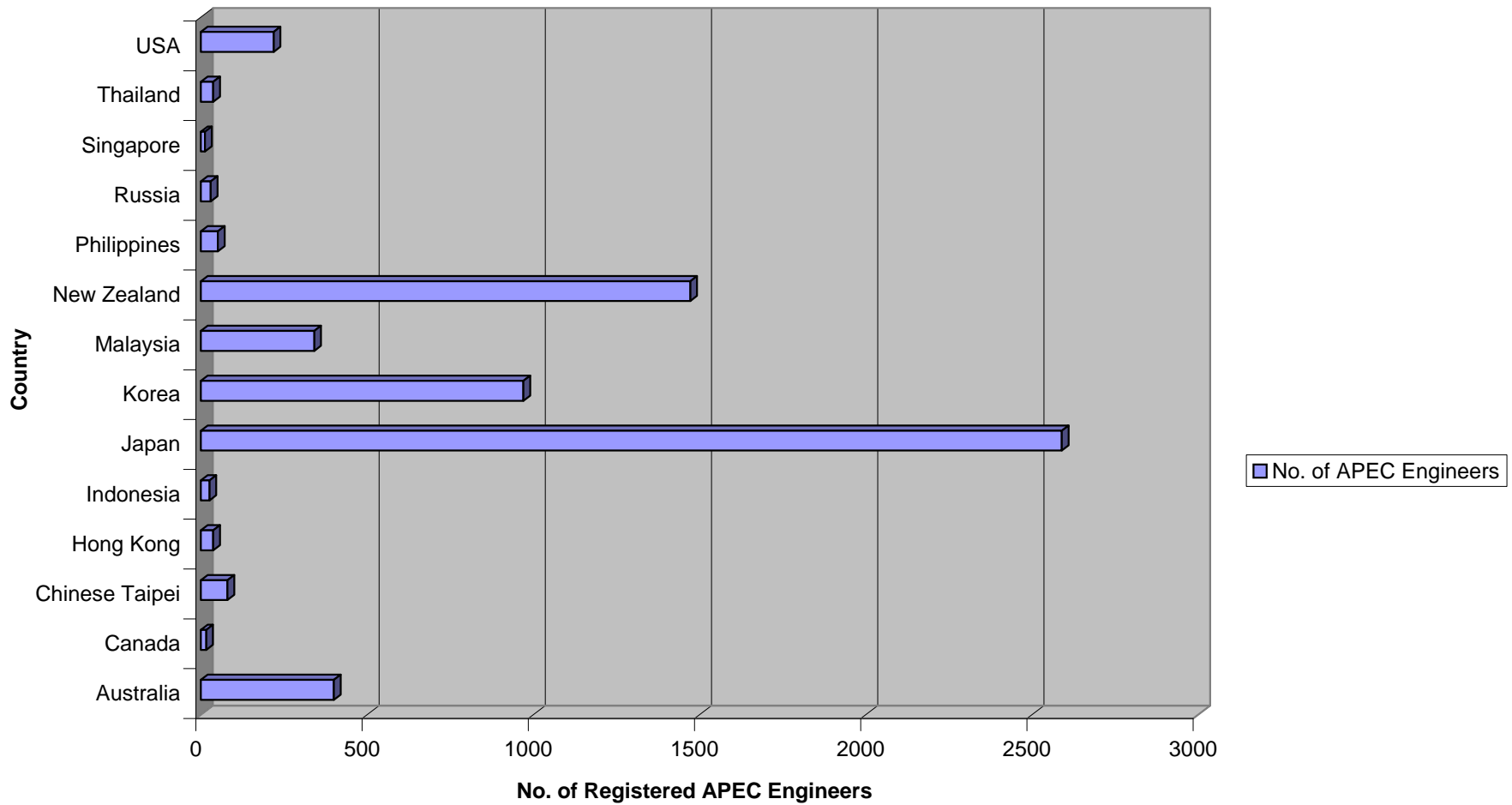
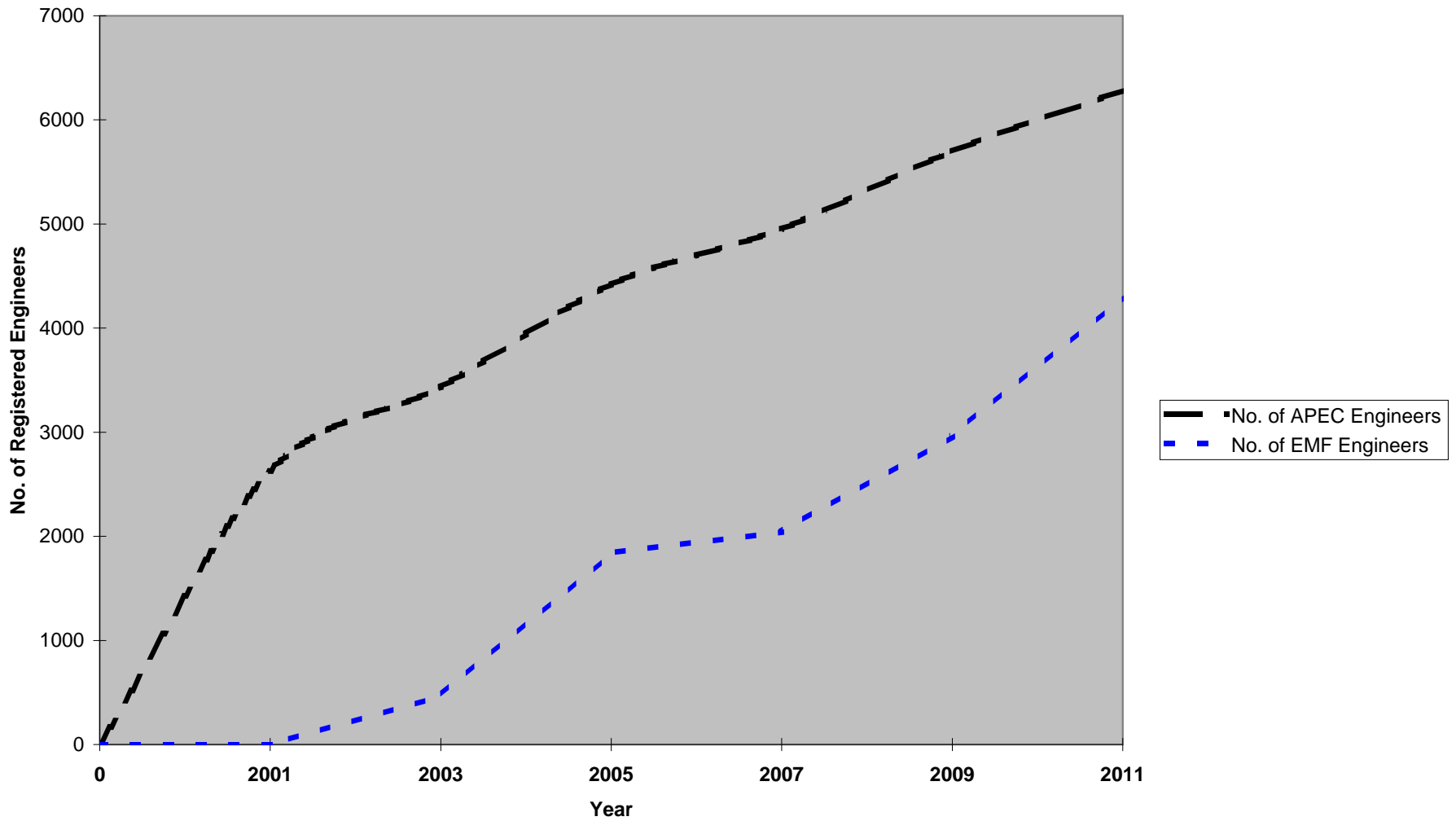


Figure 1: THE APEC ENGINEER FRAMEWORK

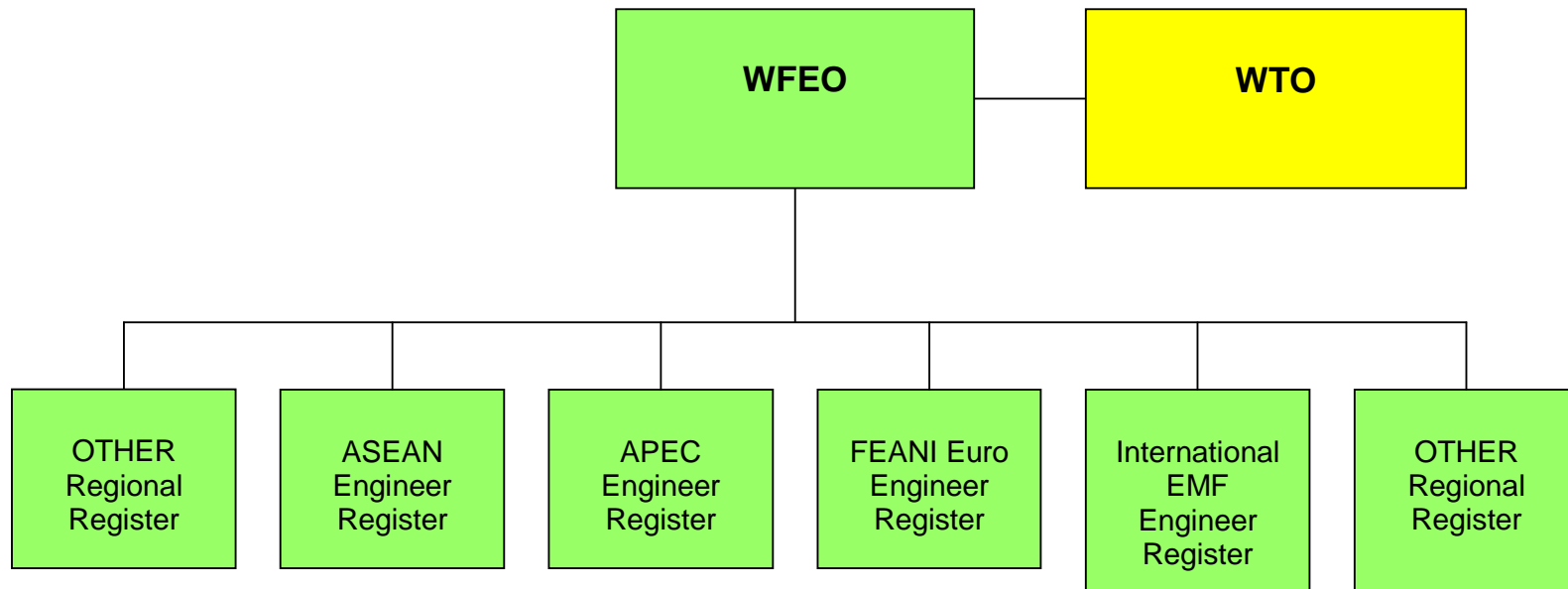




**Figure 2: REGISTERED APEC ENGINEERS FOR EACH ECONOMY AT JUNE 2011**



**Figure 3 : NUMBER OF REGISTERED APEC ENGINEERS & EMF INTERNATIONAL ENGINEERS**



**NOTE :**

**WFEO : World of Federation of Engineering Organisations**

**WTO : World Trade Organisation**

**FEANI : European Federation of National Engineering Associations**

**Figure 4: PROPOSED LINK OF BENCHMARKING REGISTERS WITH WORLD TRADE ORGANISATIONS**

	<b>Economies</b>	<b>APEC Engineers</b>	<b>IntPE Engineer</b>
<b>1</b>	Australia	400	400
<b>2</b>	Canada	16	16
<b>3</b>	Hong Kong, China	37	38
<b>4</b>	India	-	33
<b>5</b>	Indonesia	26	-
<b>6</b>	Ireland	-	10
<b>7</b>	Japan	2,589	500
<b>8</b>	South Korea	970	970
<b>9</b>	Malaysia	341	341
<b>10</b>	New Zealand	1,472	1,472
<b>11</b>	Philippines	51	-
<b>12</b>	Russia	30(3)	-
<b>13</b>	South Africa	-	17
<b>14</b>	Singapore	12	0
<b>15</b>	Sri Lanka	-	63
<b>16</b>	Chinese Taipei	80	68
<b>17</b>	Thailand	37	-
<b>18</b>	United Kingdom	-	126 (68)
<b>19</b>	United States of America	219	219
		<b>6280 (3)</b>	<b>4273 (68)</b>

- Not a member of the Register
- ( ) Members registered with address outside the economy
- Not member of EMF International Professional Engineers Register

**Table 1: REGISTERED APEC AND INTERNATIONAL PROFESSIONAL ENGINEERS REPORTED AT IEAM 2011**