



**Asia-Pacific
Economic Cooperation**



PROMOTING REGIONAL CONNECTIVITY OF PROFESSIONALLY QUALIFIED ENGINEERS IN APEC: FINAL REPORT

June 2019

Human Resources Development Working Group



**Asia-Pacific
Economic Cooperation**

Promoting Regional Connectivity of Professionally Qualified Engineers in APEC:
Final Report

APEC Human Resources Development Working Group

June 2019

APEC Project: HRD 02 2017A

Produced by

The Institution of Engineers, Singapore

70 Bukit Tinggi Road Singapore 289758

Tel: (65) 6469 5000

Email: ies@iesnet.org.sg

Website: www.ies.org.sg

For

Asia-Pacific Economic Cooperation Secretariat

35 Heng Mui Keng Terrace Singapore 119616

Tel: (65) 6891 9600

Fax: (65) 6891 9690

Email: info@apec.org

Website: www.apec.org

© 2019 APEC Secretariat

ISBN: 978-981-14-2297-3

APEC#219-HR-01.2

Acknowledgements

This project was overseen by the Project Overseer, Er. Tan Seng Chuan, Chairman of the APEC Engineer Coordinating Committee, Past President and Chairman International Outreach Committee of The Institution of Engineers, Singapore and the Project Organizer, Ms. Khoo Su Ling, Assistant Director of The Institution of Engineers, Singapore. The project was implemented in collaboration with the Ministry of Trade and Industry, Singapore. This report was written by The Right Spin, a boutique public relations agency in Singapore.

The project team would like to thank the project co-sponsors for supporting the development and completion of the project: Australia; Canada; Hong Kong, China; Indonesia; Japan; New Zealand; Russia; Chinese Taipei; and Thailand.

We would also like to thank the APEC Human Resources Development Working Group (HRDWG) and Group on Services (GOS) representatives and workshop participants for their active participation and valuable inputs during the HRDWG-GOS Workshop and Dialogue held on 13 August 2018 in Port Moresby, Papua New Guinea.

Our appreciation also goes to the taskforce members who have contributed inputs and provided guidance that were instrumental in the successful completion of the project. These members are Ms. Patty Mamola, Deputy Chairman, APEC Engineer Coordinating Committee, Past-President 2013-2014, National Council of Examiners for Engineering and Surveying, United States, Executive Director, Nevada State Board of Professional Engineers and Land Surveyors; Dr. John Li, Former President, Chinese Institute of Engineers, Chinese Taipei; Dr. Edward Wang, P.E., Chinese Institute of Engineers, Chinese Taipei; Mr. Glen Crawley, Registrar, Engineers Australia; Ms. Angela Frawley, General Counsel, Engineers Australia; Mr. Brett Williams, General Manager, Professional Standards, Engineering New Zealand; Engr. Federico A. Monsada, President, Philippine Technological Council; Ir. Lee Boon Chong, Vice President, The Institution of Engineers, Malaysia; and Mr. Akihisa Mikami, Deputy General Manager, The Institution of Professional Engineers, Japan.

We would also like to extend our appreciation to the APEC Engineer Member Organizations for contributing to the establishment of the databank structure, for

working with their members to prepare and consolidate the data for the databank and for their active participation in the workshop. These organizations are Engineers Australia; Engineers Canada; The Hong Kong Institution of Engineers; Persatuan Insinyur Indonesia; The Institution of Professional Engineers, Japan; Korean Professional Engineers Association; The Institution of Engineers, Malaysia; Engineering New Zealand; Peruvian Engineers Association; Philippine Technological Council; Association for Engineering Education of Russia; The Institution of Engineers, Singapore; Chinese Institute of Engineers, Chinese Taipei; Council of Engineers, Thailand; and National Council of Examiners for Engineering and Surveying, United States.

The project team would also like to thank the speakers of the HRDWG-GOS Workshop and Dialogue for sharing their experience and expertise with the participants. The speakers are Mr. Ho Meng Kit, CEO, Singapore Business Federation, Member of APEC Business Advisory Council and Co-chair of the Regional Economic Integration Working Group; Mr. Shinya Fujita, Director, APEC Division, Economic Affairs Bureau, Ministry of Foreign Affairs Japan; Mr. Rafael Nadyrshin, Procurement Specialist, Procurement, Portfolio and Financial Management Department, Asian Development Bank; Ir. Lee Boon Chong, Vice President, The Institution of Engineers, Malaysia; Mr. Junshi Shi, Deputy General Manager, China State Construction Engineering Corp. PNG Ltd and Mr. Yang Zhikai, Managing Director, TBEA Co. Ltd.

Last but not least, we would like to thank the APEC Secretariat for their support throughout the project cycle, especially Program Directors Ms. Anais Kedgley Laidlaw, and Ms. Asmidar Abdul Rahman.

Table of Contents

1. Glossary	1
2. Executive Summary	2
3. Introduction to Project: Objectives and Key Activities.....	4
4 (a) Key Outcomes and Lessons Learnt for APEC Engineer Databank.....	7
4 (b) Key Outcomes and Lessons Learnt for “HRDWG-GOS Workshop and Dialogue on Promoting Regional Connectivity of Professionally Qualified Engineers in APEC”	13
(i) Key Outcomes.....	13
(ii) Key Lessons Learnt.....	19
5. Recommendations	21
6. Conclusion	23
7. Annexes	24
A. APEC Engineer Member Organizations as of March 2019.....	24
B. Participating Organizations of the “HRDWG-GOS Workshop and Dialogue on Promoting Regional Connectivity of Professionally Qualified Engineers in APEC” ..	25
C. Post Workshop Evaluation.....	27

1. Glossary

APEC Engineer: a person who is recognized as a professionally qualified engineer within an APEC economy, and who has satisfied an authorized body in that economy, operating in accordance with the criteria and procedures approved by the APEC Engineer Coordinating Committee, that they have:

- Completed an accredited or recognized engineering program;
- Been assessed within their own economy as eligible for independent practice;
- Gained a minimum of seven years practical experience since graduation;
- Spent at least two years in responsible charge of significant engineering work; and
- Maintained their continuing professional development at a satisfactory level.

APEC Engineer Agreement: developed under the HRDWG, this is one of the seven International Engineering Alliance's agreements governing mutual recognition of professional engineering qualifications and competence. It recognizes substantial equivalencies of competence standards for professionally qualified engineers within the APEC economies. Its membership expanded from eight founding economies in 2000 to 15 economies in 2016.

APEC Engineer Databank: a credentials-sharing platform for professionally qualified engineers in the APEC region to enable APEC economies to verify whether the credential of an engineer is substantially equivalent to those currently working within their respective jurisdictions, and engage the services of such engineers where needed.

APEC Engineer Member Organization: an authorized body established in the participating economy, to develop and maintain a Register of APEC Engineers in that economy. Please refer to the Annex for the list of APEC Engineer Member Organizations.

APEC Engineer Register: a registry of APEC Engineers developed and maintained by APEC Engineer Member Organizations in individual economies.

GOS: Group on Services.

HRDWG: Human Resources Development Working Group.

2. Executive Summary

Growing infrastructural opportunities in Asia-Pacific have significantly increased the demand for professionally qualified engineers, especially those with experience and specialized skills in energy, environmental, water and transport infrastructure sectors.

Given the challenges related to the uneven supply of such individuals across the APEC region, enhancing the mobility of engineers will boost economic integration and cross-border trading of goods and services amongst APEC economies.

The APEC Engineer, whose register was officially launched in 2000, is an agreement to recognize the 'substantial equivalence' of competence standards for professionally qualified engineers within APEC economies.

To move this agreement forward to support evolving demands, the APEC HRDWG awarded a project entitled "Promoting Regional Connectivity of Professionally Qualified Engineers in APEC" to Singapore with The Institution of Engineers, Singapore (IES) as overseer of the project.

In collaboration with the Ministry of Trade and Industry, Singapore, IES was to implement the project in support of the APEC Services Competitiveness Roadmap's (2016 – 2025) action plan on supporting cross-border mobility for professionals by strengthening the APEC Engineer Register. The project was to also contribute to the people-to-people connectivity pillar under the APEC Connectivity Blueprint, as it facilitates skilled labor mobility across borders to fill skills gaps in APEC markets.

The project comprised two main components, both funded by APEC: creation of the APEC Engineer Databank and organizing of the "HRDWG-GOS Workshop and Dialogue on Promoting Regional Connectivity of Professionally Qualified Engineers in APEC".

Since its launch in August 2018, the APEC Engineer Databank has seen a steady increase in sign-ups with a majority of users from the private sector in industries such as aerospace, building and construction, energy, marine, process, shipbuilding, telecommunications and transport.

The HRDWG-GOS Workshop and Dialogue, held on 13 August 2018, gathered various valuable views and ideas raised by participants. They acknowledged that the databank would move the APEC Engineer Register initiative forward in improving mobility of engineers; and suggested ways to increase the databank's impact as a credentials-sharing platform for professionally qualified engineers in the region. They also reinforced the demand for professionally qualified engineers as well as the lack of such engineers locally, leading organizations to engage foreign engineers to fill manpower gaps.

The 'Promoting Regional Connectivity of Professionally Qualified Engineers in APEC: Final Report' concludes with specific short-term and long-term recommendations, based on feedback from participants at the HRDWG-GOS Workshop and Dialogue, with the aim of guiding APEC to support cross-border mobility for professionally qualified engineers.

Short-term recommendations comprise incorporating the work of APEC Mutual Recognition Agreements (MRAs), including APEC Engineers, in the APEC Services Competitiveness Roadmap (ASCR); and encouraging APEC economies' governments and engaging private sector in using APEC Engineer Registers.

Long-term recommendations are harmonizing APEC Engineer Registers with individual economies' professional engineering services practices and encouraging those economies that have not participated in the APEC Engineer MRA to do so.

3. Introduction to Project: Objectives and Key Activities

The importance of facilitating the mobility of qualified persons among APEC member economies was raised back in 1995 at the APEC Leaders' meeting in Osaka.

Consistent with the Osaka Action Agenda, in January 1996, at the APEC Human Resources Development Ministerial Meeting in Manila, the then-18 member economies urged the acceleration and expansion of project initiatives on the mutual recognition of skill qualifications.

Subsequently, the HRDWG met in New Zealand and agreed to an Australian initiation on the project, focusing on professional engineering accreditation, recognition and development. In May 1996, eight member economies participated in the First Steering Committee Meeting of the project in Australia.

These meetings led to the commencement of the APEC Engineer Register in 2000, laying an important foundation in promoting mobility of professionally qualified engineers.

The APEC Engineer Manual was also developed in 2000 to provide overall guidance to participating APEC economies for the operation of APEC Engineer Registers. The Manual includes the Framework that provides a mechanism through which participating economies can work together to identify certain professional engineers, considered by participants to be substantially equivalent in their competence to practice within any participating economy, as APEC Engineers.

However, since then, many APEC economies remained unaware of the APEC Engineer Register and its operating process.

The demand for engineering services has also evolved significantly over the years. According to a study developed by the Asian Development Bank in 2017, it is estimated that developing economies in Asia will need to invest \$26 trillion from 2016 to 2030, or \$1.7 trillion per year, if the region is to maintain its growth momentum,

eradicate poverty, and respond to climate change (climate-adjusted estimate). Of the total climate-adjusted investment needs over 2016–2030, \$14.7 trillion will be for power and \$8.4 trillion for transport. The \$1.7 trillion annual estimate is more than double the \$750 billion the Asian Development Bank estimated in 2009. The inclusion of climate-related investments is a major contributing factor. A more important factor is the continued rapid growth forecasted for the region, which generates new infrastructure demand.

In addition, individual economies' initiatives aimed at addressing global infrastructure gaps and improving connectivity will play an important role in driving infrastructure growth in developing economies in the Asia-Pacific. This will create a value chain for professional services including engineering services.

These factors have called for a review and re-vitalization of the agreement.

In view of this, IES from the Singapore economy embarked on a two-pronged project entitled "Promoting regional connectivity of professionally qualified engineers in APEC", as the project overseer. The APEC-funded project is supported by the APEC HRDWG and co-sponsored by the following economies: Australia, Canada, Hong Kong, China, Indonesia, Japan, New Zealand, Russia, Chinese Taipei, and Thailand.

The first component of the project focused on creation of the APEC Engineer Databank. While an APEC Engineer Register is a registry of APEC Engineers developed and maintained by an APEC Engineer Member Organization, the databank is a central, accessible and public platform offering profiles, credentials and contact details of registered APEC Engineers.

The databank's goal is to enable APEC economies to verify the substantial equivalence of credentials of engineers against those currently working within their respective jurisdictions and engage the services of such engineers where needed.

The second component of the project was the organization of the "HRDWG-GOS Workshop and Dialogue on Promoting Regional Connectivity of Professionally

Qualified Engineers in APEC” to bring together key stakeholders including policymakers, business and private sector representatives and APEC Engineers to achieve the following objectives:

- Serve as a refresher of the APEC Engineer Agreement;
- Launch and promote the use of the APEC Engineer Databank;
- Promote the APEC Engineer Register as the official platform to facilitate the mobility of engineers;
- Enable developing economies to learn about the APEC Engineer program and understand its value in facilitating the transfer of technology to those seeking assistance;
- Enable the discussion of regulatory practices, issues and concerns in the provision of cross-border engineering services; and
- Develop specific recommendations to promote regional integration.

As the final pillar of this project, this report sums up key outcomes from the two project components and identifies new areas of work for APEC’s consideration for its goal of facilitating engineering labor mobility.

4 (a) Key Outcomes and Lessons Learnt for APEC Engineer Databank

The APEC Engineer Databank

(<http://www.ieagrements.org/agreements/apec/apec-engineer-databank>), created with APEC funding and a key outcome of the project, was officially introduced at the ‘HRDWG-GOS Workshop and Dialogue session on Promoting Regional Connectivity of Professionally Qualified Engineers in APEC’ held in Papua New Guinea on 13 August 2018.

APEC AGREEMENT

APEC AGREEMENT

> APEC ENGINEER DATABANK

ENGINEER ADMINISTRATION GUIDE

MEMBERS

EXECUTIVE COMMITTEE

HOW TO APPLY

APEC ENGINEER DATABANK

Introduction

The APEC Engineer Databank is established to serve as a credentials-sharing platform for professionally qualified engineers in APEC economies. The databank would enable APEC economies to verify whether the credential of an engineer is substantially equivalent to those currently working within their respective jurisdictions, and engage the services of such engineers where needed. This will significantly reduce the search costs and time for competent engineers, particularly for projects with unique requirements and demands.

APEC Engineer

An APEC Engineer is defined as a person who is recognised as a professionally qualified engineer within an APEC economy, and who has satisfied an authorised body in that economy, operating in accordance with the criteria and procedures approved by the APEC Engineer Coordinating Committee. The APEC Engineer Databank features the list of registered APEC Engineers who have achieved the required common standards of professional competence in their home economies and include useful information such as their expertise, industry, summary of experience and contact details.

Potential Users

The databank is open to the public. It will benefit in particular:

- Public and Private Sector Organizations – provide them with resource to support cross border projects, skills transfer and innovation
- Academic Institutions and Training Course Providers – help them identify suitable trainers, experts and speakers for their courses, initiatives and research & development programme

First time users are required to [register a login account](#).

For existing user, please proceed to log in below.

Email

Password

Remember me next time?

LOG IN

[Forgotten password? | Register](#)

Figure 1.1 APEC Engineer Databank login page

To recap, the objectives of the databank are:

- To provide users with a central, accessible and public platform to share clear and useful information (eg. profile, credentials, and contact details) of registered APEC Engineers;
- To enable APEC economies to verify whether the credential of an engineer is substantially equivalent to those currently working within their respective jurisdictions, and engage the services of such engineers where needed. In this regard, it is to help governments verify the identity and credentials of individuals proclaiming they are APEC Engineers;
- To reduce the search costs and time for competent engineers, particularly for projects with unique requirements and demands.

APEC AGREEMENT

APEC Registered Engineers

The APEC Engineer Databank features the list of registered APEC Engineers who have achieved the required common standards of professional competence in their home economies.

For registered APEC Engineers in Australia, [click here](#).

For registered APEC Engineers in Canada, [click here](#).

For registered APEC Engineers in New Zealand, [click here](#).

For registered APEC Engineers in US, [click here](#).

Search:

Name	Organisation	Expertise/Specialization	Discipline	Industry	Economy	Registration Number	Expiry Date
Abdul Nasir Musa	Jurutera CMP Sdn Bhd	<ul style="list-style-type: none"> Project Management Coordinating M&E Service 	Electrical	Consultancy	Malaysia	595	2022-01-01
Abdul Rashid Bin Maidin	Akademi Professional KOSAS	<ul style="list-style-type: none"> Project Management 	Civil	Education	Malaysia	129	2018-01-01
Abdul Razak bin Ali	Prima Reka Konsultan	<ul style="list-style-type: none"> Road Safety Audit Traffic Impact Assessment 	Civil	Consultancy	Malaysia	222	2021-01-01
Abdul Razak Yakob	Ark-za Engineering	<ul style="list-style-type: none"> Drilling Engineering Enhanced Oil Recovery 	Petroleum	Consultancy	Malaysia	540	2021-01-01
Abdul Rifai	Pli	<ul style="list-style-type: none"> EPC for Oil & Gas Project Management 	Physics	PT. Tripatra	Indonesia	2-03-00-000003-02	2022-12-09
Abdullah bin Kasim	Jurutera Budiman (M&E) Sdn Bhd	<ul style="list-style-type: none"> Electrical Hv Distribution Telecommunication 	Electrical	Consultancy	Malaysia	48	2022-01-01
Abi Sufyan Bin Zamudin	Repsol Oil & Gas Malaysia Ltd	<ul style="list-style-type: none"> Field Operations & Maintenance Design Testing & Commissioning 	Electrical	Energy	Malaysia	547	2021-01-01

Figure 1.2 Screenshot of the homepage of the APEC Engineer Databank after a user logs in

Search:

Name	Organisation	Expertise/Specialization	Discipline	Industry	Economy	Registration Number	Expiry Date
Abdul Nasir Musa	Jurutera CMP Sdn Bhd	<ul style="list-style-type: none"> → Project Management → Coordinating M&E Service 	Electrical	Consultancy	Malaysia	595	2022-01-01
Abdul Razak bin Ali	Prima Reka Konsultan	<ul style="list-style-type: none"> → Road Safety Audit → Traffic Impact Assessment 	Civil	Consultancy	Malaysia	222	2021-01-01
Abdul Razak Yakob	Ark-za Engineering	<ul style="list-style-type: none"> → Drilling Engineering → Enhanced Oil Recovery 	Petroleum	Consultancy	Malaysia	540	2021-01-01
Abdullah bin Kasim	Jurutera Budiman (M&E) Sdn Bhd	<ul style="list-style-type: none"> → Electrical Hv Distribution → Telecommunication 	Electrical	Consultancy	Malaysia	48	2022-01-01
Abiramee a/p Somasuntharam	EDGE Consulting Engineers	<ul style="list-style-type: none"> → Building Services 	Electrical	Consultancy	Malaysia	450	2018-01-01
Adenan bin Rashid	SCG Infrastem Sdn Bhd	<ul style="list-style-type: none"> → Electrical Design → Railway Signalling & Sub System 	Electrical	Consultancy	Malaysia	345	2019-01-01

Figure 1.3 Screenshot of the APEC Engineer Databank with search engine utilized

In particular, it will help to facilitate:

- The exchange of innovative ideas and best practices
- Transfer of technology to developing economies seeking such assistance
- People-to-people exchanges

The databank is publicly accessible allowing all economies, members or not, to identify and engage the services of professionally qualified engineers where needed. The databank supports the capacity building needs of APEC developing economies by creating opportunities for sharing of expertise during projects to enable local stakeholders to learn from the professionally qualified.

Figure 1.4 Screenshot of an APEC Engineer's credentials

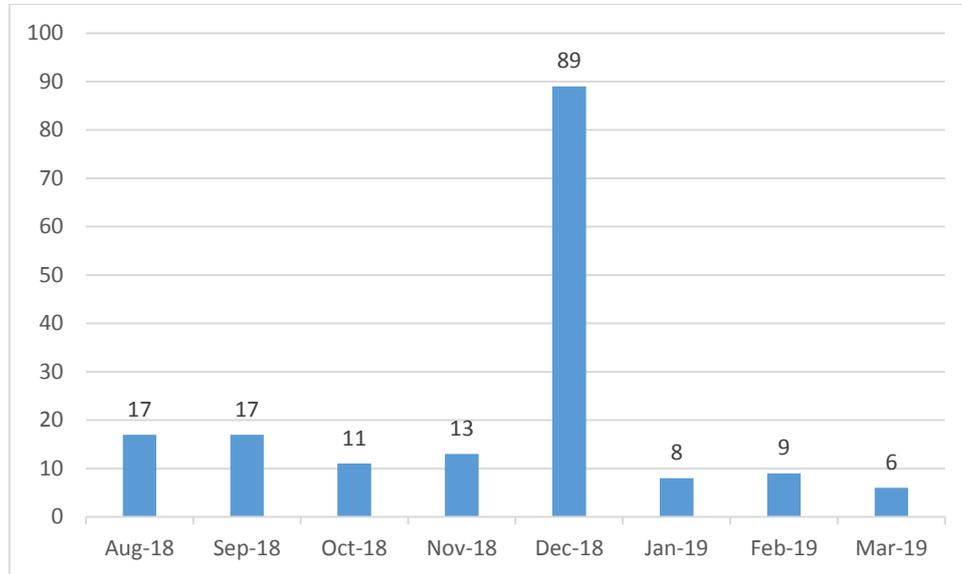
Site Sign-up

From its launch on 13 August 2018 to March 2019, the databank has experienced a steady increase in sign-ups, with a notable jump in December. This was due to increased promotional efforts by the APEC Engineer Member Organizations, the APEC Human Resources Development Working Group, the APEC Group on Services, the APEC Business Advisory Council, the Singapore Business Federation and the World Federation of Engineering Organizations during the year-end period. As of March 2019, the databank has registered a total of 170 users.

Figure 2.1

Database sign-ups since launch

■ No of new sign-ups from Aug 2018 to March 2019

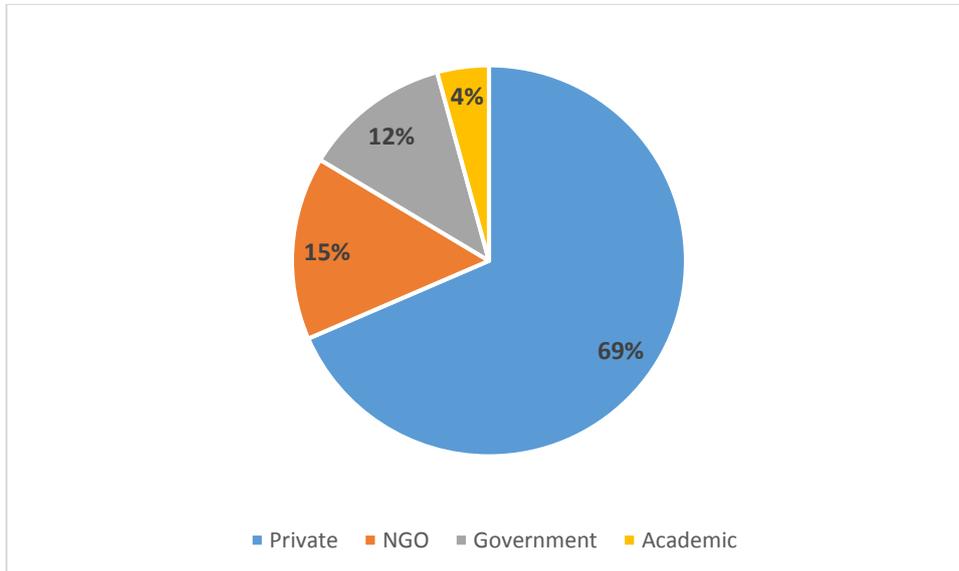


User Profile

Out of the 170 users, the majority are from the private sector. They come from various industries ranging from aerospace, building and construction, energy and marine to process, shipbuilding, telecommunications and transport. The remaining users are from academic institutions, government agencies and non-governmental organizations. Here is the actual breakdown:

Figure 2.2

Type of Sectors



Site Usage

During the same period, the databank garnered over 300 page visits from 23 economies; while 42 out of the 170 users were returning users.

The most viewed types of engineering expertise during this period are: Aerospace Engineering, Bridges & Tunnels, Civil & Structural Engineering, Construction Engineering, Debris Flow Control, Electrical Systems Engineering, Fluid Dynamics, HVAC Design, Industrial Design, Irrigation and Drainage, Non-destructive Testing, Pavement Design and Management, Project Management, Rural Development, Slopeland Development and Disaster Prevention, Soil and Water Conservation, Tele-communications and Technology Management, Track Engineering and Value Engineering.

4 (b) Key Outcomes and Lessons Learnt for “HRDWG-GOS Workshop and Dialogue on Promoting Regional Connectivity of Professionally Qualified Engineers in APEC”

(i) Key Outcomes

The workshop and dialogue achieved several outcomes that are in line with the planned objectives:

Directed the attention of stakeholders in APEC economies to the APEC Engineer Agreement and the APEC Engineer Register

- Through the workshop, participants were able to learn the background that led to the commencement of the APEC Engineer Register, its role and competency standards. Participants gained a better understanding of the quality standard that comes with the title of APEC Engineer.
- The opening address by Mr. Ho Meng Kit, CEO of Singapore Business Federation, Member of APEC Business Advisory Council and Co-chair of the Regional Economic Integration Working Group refreshed the participants’ understanding of the APEC Engineer Agreement. It called attention to the agreement’s role in recognizing equivalences in the qualifications and experience of qualified practicing engineers in APEC.
- Participants gained a better appreciation of the value of APEC Engineer Register in facilitating mobility of engineers in Asia-Pacific. The presentation titled “APEC Engineer Register, Challenges and The Way Forward,” by Er. Tan Seng Chuan, Chairman of APEC Engineer Coordinating Committee, enhanced their appreciation of the value of the registry as a readily accessible pool of qualified engineers who can fulfil infrastructure project opportunities in Asia-Pacific.
- Participants also developed a greater understanding of the challenges faced by the APEC Engineer Register from Er. Tan. These challenges include a lack of effort in promoting mobility of engineers until recent years, low awareness amongst stakeholders and lack of a centralized information platform. Er. Tan also

pointed out cultural, language, regulatory system differences amongst APEC economies; segregated efforts in operating registers and insufficient value-add of the Register as other challenges.

- Participants also deepened their understanding of future plans for the APEC Engineer Register, including development of short-term goals and long-term roadmaps. Key goals include getting the governments, private organisations and multilateral institutions to recognize the Register as the official platform for the mobility of engineers by tapping on the readily accessible pool of qualified engineers for their needs; and promoting the APEC Engineer program.

Acted as a platform to launch and promote the APEC Engineer Databank

- The workshop equipped participants with comprehensive knowledge of the APEC Engineer Databank’s objectives, target outcomes, target audience, design rationale, security and data protection measures and performance indicators. They also left the workshop with practical knowledge on how to access, register and use the databank via the International Engineering Alliance website. This was achieved through the “Introduction to APEC Engineer Databank” presentation by Ms. Khoo Su Ling, Assistant Director of IES on the APEC Engineer Databank and other presentations.
- With the workshop and dialogue, participants are now aware of the role of each APEC Engineer member organization in maintaining and promoting the use of the databank. They have also been motivated to promote the Register as the official platform for facilitating the mobility of engineers to various target stakeholders in their individual economies, including:
 - Governments and private sector organizations to address the lack of an accessible, reliable and comprehensive source of information on engineering expertise; save them time, resources and increase effectiveness in recruitment; and conduct background checks of engineers and determine market sizing;

- Private sector to overcome limitations in gaining access to qualified engineers fitting their project requirements with their current practice of going through recruitment agencies;
 - APEC Engineers to enable them to benchmark themselves against their peers and improve their credentials; and
 - Training institutions to facilitate training of engineering practitioners in various disciplines to improve engineering efficiency.
- Through the workshop, participants have also come to regard the databank as a centralized platform providing skillsets and credentials of registered APEC Engineers that will considerably enhance the efficiency of search for such engineers.
 - In particular, participants highlighted that the databank would give hiring organizations a wider selection of qualified engineers to fulfill demand for engineering expertise, especially in rapidly growing sectors. The participants also expressed that the databank would contribute to improving the engineering efficiency and productivity in their economies as this would create opportunities for the local stakeholders to learn from the professionally qualified. PNG indicated that the databank would support their government in verifying the identity and credentials of individuals proclaiming they are APEC Engineers.
 - The workshop achieved a general consensus amongst participants of the adequacy of the databank's twelve-field standard information template in serving the intended purpose. This template has been designed based on a pre-databank survey conducted with potential users through the APEC Engineer Member Organizations on their key search criteria when hiring engineers.

Promoted value of the APEC Engineer program in facilitating technology transfer and innovation exchange amongst economies

- The session enabled representatives from several developing economies to understand the value of the APEC Engineer program and the APEC Engineer

Databank in promoting technology transfer and exchange of innovative ideas amongst APEC economies.

- Participants from developed economies also acknowledged the importance of the databank in enabling cross-border trading of engineering services by making available a central pool of qualified engineers with varied expertise. Malaysia's representative highlighted that mobility of engineers would help companies secure overseas projects with the support of their own economies' engineers and increase cross-border collaborations.
- Participants such as the representative from Chinese Taipei indicated that foreign professional engineers would enhance the skill sets of their local engineers, especially in fields such as earthquake where engineers from economies such as Australia have greater experience.
- PNG's representative highlighted that mobility of engineers is valued by its economy as a developing economy as it opens up opportunities for technology transfer.



Increased awareness of infrastructural opportunities in Asia-Pacific

- The workshop provided participants with insights into project opportunities in APEC and highlighted the importance of quality infrastructure in enhancing connectivity. The workshop also provided participants with the opportunity to network with stakeholders from other economies.
- The series of presentations on ‘Project Opportunities in APEC’ by Ministry of Foreign Affairs, Japan; Asian Development Bank; The Institution of Engineers, Malaysia; and China State Construction Engineering Corp. PNG Ltd and TBEA Co. Ltd provided participants with insights into project opportunities, requirements and accompanying procurement processes in the region.
- The presentation on “Quality Infrastructure: Its Role in the APEC Region’ by Ministry of Foreign Affairs, Japan highlighted to the participants the importance of quality infrastructure development in strengthening connectivity and stimulating economic growth across the region. He listed economy in view of life-cycle cost, debt sustainability and open access as elements of quality infrastructure. He pointed out a shift in the growing demand for infrastructure financing that signifies an abundance of job opportunities for professionally qualified persons in the region.



- The Asian Development Bank gave a presentation on ‘Business Opportunities for Consulting Services under ADB Financed Projects’ to give participants the

information on project opportunities available for engineers in fast growing economies across different sectors, the ADB procurement policies and consultants recruitment procedures. The growing demand for infrastructure in the region emphasizes the need for mobility of qualified engineers.

- Participants were given a glimpse of 'Project Prospects in Malaysia' by the presentation from The Institution of Engineers, Malaysia with identified sectors/areas in Malaysia that is lacking engineering expertise and would benefit from the mobility of engineers across the region to fill up these gaps.
- China State Construction Engineering Corp. PNG Ltd and TBEA Co. Ltd gave separate presentations on the 'Demand and Opportunities for Engineering Professionals in Asia-Pacific Region,' respectively touching on the roles and expectations of a professionally qualified engineer in cross-border projects as well as the abundance of work opportunities for engineers in specific economies.
- Such knowledge would help APEC Engineer Member Organizations in their review of the APEC Engineer Agreement to better address heightened demand for engineers in Asia-Pacific. It has also shown them that the demand for professionally qualified engineers in Asia-Pacific is real thereby underscoring the important role that databank could play.
- Participants also took the opportunity to surface issues and challenges in promoting cross-border engineering services due to regulatory practices of their individual economies when it comes to hiring of foreign engineers.

(ii) Key Lessons Learnt

- Feedback from participants once again validated that the demand for professionally qualified engineers is real and ever increasing due to the rapidly rising number of projects across Asia-Pacific. The lack of such engineers from local pools has also been a growing problem - compelling hiring organizations to turn to engaging foreign engineers to fill the manpower gaps. However, these organizations still face significant challenges in recruiting foreign engineers with specialized skill sets, due to lack of access to such expertise.
- The stakeholders of APEC economies see benefits of improving the mobility of engineers. However, there is still work that needs to be done to increase general awareness of the APEC Engineer Agreement and its initiatives; as well as the individual organization's roles in promoting the Registry.
- While participants acknowledged that the databank would move the APEC Engineer Register initiative forward, they also raised issues and concerns related to regulatory practices, costs and other areas that hinder the provision of cross-border engineering services. The issues include:
 - The requirement of some economies for foreign engineers to be registered with relevant engineering authorities before being allowed to work could impede the progress of certain projects. This is because the registration process could be lengthy due to the need to validate that the prospective foreign engineer's qualifications is of equal standing to a local engineer's.
 - On the other hand, according to PNG, multilateral institutions facilitating infrastructural projects could sometimes prioritize relevant project and local or regional experience over professional accreditation status during recruitment of foreign engineers for some projects. Regulatory authorities, however, require prospective engineers to be registered by relevant engineering organizations in their economy based on their professional competence. The disparity has led to concerns of foreign engineers not

fulfilling regulatory registration requirements being brought into the member economy to work on projects.

- Some economies are in a dilemma between hiring local versus foreign engineers. Although foreign engineers bring knowledge, skill sets and experience that are needed for certain projects, the costs to hire them is higher. Limited access to such expertise within some specialized field further elevates hiring costs. As such, hiring organizations have to choose local engineers who may not have the full expertise required of the project, to lower project costs.
- Engineers in some economies like Philippines have been moving to other economies that offer stronger remuneration for their expertise for certain projects. While this builds up the credentials of such engineers, it has also left manpower gaps in their home economies.



5. Recommendations

Based on the participants' feedback, the following recommendations are proposed for APEC economies to consider, where relevant and appropriate:

Short-Term Focus

- 1 *Incorporating work of APEC MRAs, including the APEC Engineers, into the APEC Services Competitiveness Roadmap (ASCR)*** under a new objective of “improving existing MRAs” to the Action Plan #2 “Supporting Cross-Border Mobility for Professionals”. While Action Plan #2 is driven by the HRDWG, reporting its work into the ASCR will allow recognition and promote its work.
- 2 *Encourage all APEC economies' governments to promote and use the APEC Engineer Registers***, which can reduce search costs and time for professionally qualified engineers to fulfill various competency needs for cross-border infrastructural projects. To achieve this, the governments, for instance, may consider referring to the APEC Engineer as the preferred manpower criteria in cross-border contracts, subject to domestic laws and frameworks.
- 3 *Engage the private sector in developing and using the Registers***. The private sector has an important role to play in realizing mobility of engineers across APEC as it is well informed on labor market needs. It is useful to leverage APEC marketing platforms to promote the Registers such as creating a page and permanent link on the APEC website via the GOS microsite.

The APEC Engineer Coordinating Committee has to also start to engage with the APEC Business Advisory Council (ABAC) to promote and encourage the use of the APEC Engineer Register amongst the private sector. The project overseer participated as a speaker in the Asia-Pacific Services Coalition-ABAC Public-Private Dialogue on Services entitled ‘The Impact of New Technologies; Implementing the APEC Services Competitiveness Roadmap

in the Digital Era' in April 2019 to share information on APEC Engineers, served as a good start and such efforts will continue.

It is also recommended for the HRDWG and GOS to engage with the APEC Engineer Coordinating Committee when looking at issues on professional mobility.

Long-Term Focus

- 4 *Consider harmonization of APEC Engineer Registers with individual economies' professional engineering services practices.*** It will inevitably take time for industry to integrate the APEC Engineers system into their own professional practice for professionally qualified engineers due to variations in requirements and processes. Nevertheless, economies may wish to consider beginning this process in view of the immense benefits that such a harmonization would bring to address growing demands for engineering services across borders in the future.

- 5 *Encourage remaining economies to consider participating in the APEC Engineer MRA*** which currently has 15 participating economies. The APEC Engineers may also wish to consider if there are synergies to also reach out to APEC observers such as ASEAN allowing them to join as observers in the annual APEC Engineer Coordinating Committee meeting.

6. Conclusion

The “Promoting regional connectivity of professionally qualified engineers in APEC” project has created a new milestone in the effort to enhance cross-border mobility for engineering professionals to address the growing demand for engineers in Asia-Pacific.

The databank is off to a good start with potential users in APEC economies acknowledging its potential in reducing search costs and time for professionally qualified engineers for projects with unique requirements. These members have also shown renewed commitment to promote the databank to the stakeholders in their economies.

The workshop and dialogue have allowed participating representatives to highlight ideas to improve the databank and achieved amongst them a greater understanding of the collective issues APEC economies face in generating greater trade in engineering services.

The recommendations within this report are meant to serve as a guide for APEC economies when taking further steps towards increasing mobility of engineers to drive the region’s future infrastructural and economic growth. To successfully achieve this common goal, the APEC Engineer Coordinating Committee will continue to work with relevant stakeholders to bring engineering expertise to economies in need and develop capacity for sustainable development.

7. Annexes

A. APEC Engineer Member Organizations as of March 2019

Economy	Represented by
Australia	Engineers Australia
Canada	Engineers Canada
Hong Kong, China	The Hong Kong Institution of Engineers
Indonesia	Persatuan Insinyur Indonesia
Japan	The Institution of Professional Engineers, Japan
Korea	Korean Professional Engineers Association
Malaysia	The Institution of Engineers, Malaysia
New Zealand	Engineering New Zealand
Peru	Peruvian Engineers Association
Philippines	Philippine Technological Council
Russia	Association for Engineering Education of Russia
Singapore	The Institution of Engineers, Singapore
Chinese Taipei	Chinese Institute of Engineers
Thailand	Council of Engineers
United States	National Council of Examiners for Engineering and Surveying

B. Participating Organizations of the “HRDWG-GOS Workshop and Dialogue on Promoting Regional Connectivity of Professionally Qualified Engineers in APEC”

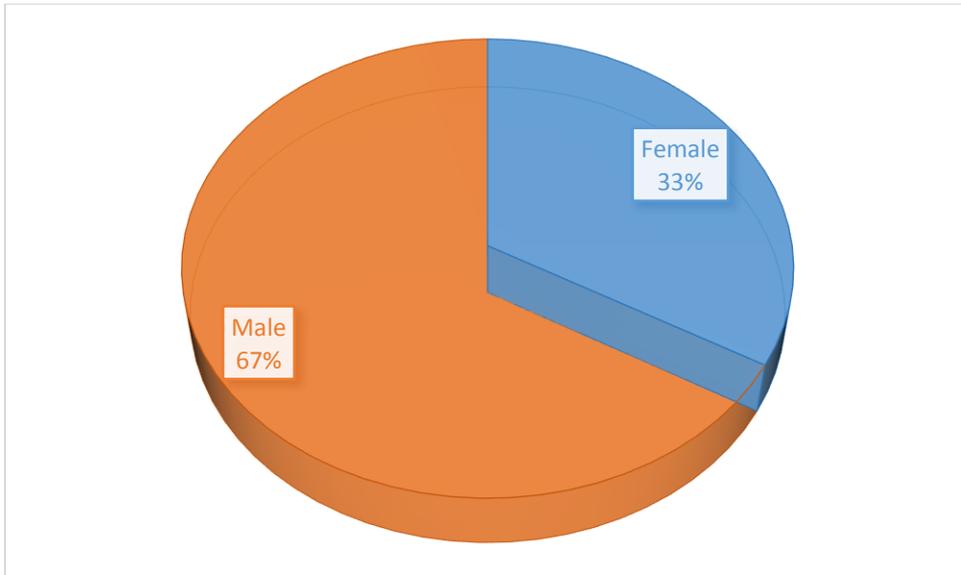
Economy	Represented by
Australia	Engineers Australia
	Department of Foreign Affairs and Trade
Chile	Ministry of Foreign Affairs
China	China State Construction Engineering Corp. PNG Ltd.
	TBEA Co. Ltd
Indonesia	Ministry of Trade, Republic of Indonesia
Japan	The Institution of Professional Engineers, Japan
	Ministry of Foreign Affairs
Korea	Korean Professional Engineers Association
Malaysia	Economic Planning Unit
	The Institution of Engineers, Malaysia
Mexico	Ministry of Economy
Papua New Guinea	Asian Development Bank
	Department of Agriculture & Livestock
	Department of Education
	Department of Higher Education, Research, Science and Technology
	Department of Labour and Industrial Relations
	Department of National Planning & Monitoring
	Department of Trade Commerce and Industry
	Department of Transport
Eda Ranu	

	ExxonMobil PNG Ltd
	Inside Out Ltd
	Nakamult Consultants
	The Institution of Professional Engineers Papua New Guinea
	PNG DataCo Ltd
	PNG Ports Corporation
	PNG University of Technology
	South Pacific Engineers Association
	Stocks & Partners Ltd
	Water PNG Ltd
Peru	Peruvian Engineers Association
	Ministry of Foreign Affairs
Philippines	APEC Business Advisory Council
	Department of Foreign Affairs
	Philippine Technological Council
Singapore	APEC Engineer Coordinating Committee
	APEC Secretariat
	Ministry of Trade and Industry
	Singapore Business Federation
	The Institution of Engineers, Singapore
Chinese Taipei	Calvin Consulting Engineers
	Ministry of Economic Affairs
	Public Construction Commission
Thailand	Ministry of Commerce
Viet Nam	Ministry of Industry and Trade
	Ministry of Planning and Investment

C. Post Workshop Evaluation

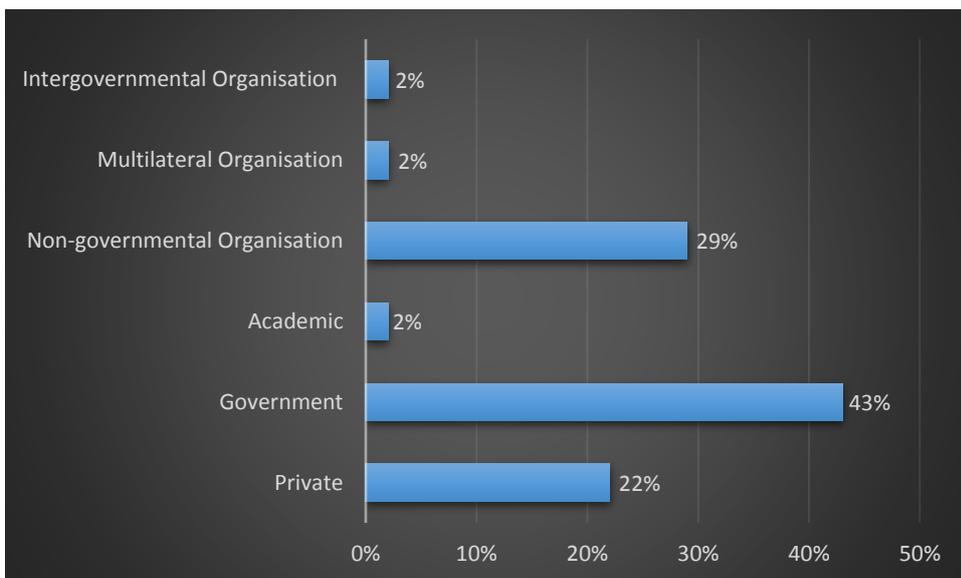
In total, the workshop attracted 63 participants from 15 economies with a 33% representation of women.

Participation by Gender



The workshop also saw active participation from the private and public sectors which made up close to 70% of its total participants.

Participation by Organization Type





Produced by The Institution of Engineers, Singapore
70 Bukit Tinggi Road Singapore 289758
Tel: (65) 6469 5000
Email: ies@iesnet.org.sg
Website: www.ies.org.sg

For
Asia-Pacific Economic Cooperation Secretariat
35 Heng Mui Keng Terrace Singapore 119616
Tel: (65) 6891 9600
Fax: (65) 6891 9690
Email: info@apec.org
Website: www.apec.org

© 2019 APEC Secretariat

ISBN: 978-981-14-2297-3
APEC#219-H.R-01.2