Asia-Pacific
Economic Cooperation

APEC Workshop on Promoting the Development of Wind Energy, Phase 2 – Public Private Partnership for Wind Energy Development

Ha Noi, Viet Nam
September 2015

Energy Working Group

January 2016

APEC Project: EWG 15-2015A

Produced by

Mrs Hoang Thi Lien
Mrs Pham Quynh Mai,
54 Hai Ba Trung street, Ha Noi 10000, Viet Nam

For
Asia-Pacific Economic Cooperation Secretariat
35 Heng Mui Keng Terrace
Singapore 119616
Tel: (65) 68919 600
Fax: (65) 68919 690
Email: info@apec.org
Website: www.apec.org

APEC#216-RE-01.1

Asia-Pacific
Economic Cooperation

EWG 15 2015A – APEC Workshop on Promoting the Development of Wind Energy, Phase 2 – Public Private Partnership for Wind Energy Development

Ha Noi city, Viet Nam

September 24th – 25th, 2015

Summary Report

Purpose: Information

Submitted by: Viet Nam

APEC Workshop on Promoting the Development of Wind Energy, Phase 2 – Public Private Partnership for Wind Energy Development

Ha Noi city, Viet Nam

September 24th – 25th,2015

Summary Report

I. Introduction

On September 24th – 25th, 2015, the *APEC Workshop on Promoting the Development of Wind Energy, Phase 2 – Public Private Partnership (PPP) for Wind Energy Development*, initiated by Viet Nam and co-sponsored by China and the United States, was held in Ha Noi city, Viet Nam. Speakers and participants came from nine APEC member economies (Indonesia, Japan, Malaysia, New Zealand, the Philippines, Chinese Taipei, Thailand, USA and Viet Nam). Most of the Workshop participants were from the public sector, academic institutions or the private sector relating to wind energy.

The Workshop sought to enhance understanding on the use of PPP to develop wind energy. It aimed also at providing the opportunities for wind energy experts from APEC member economies, wind energy producers and investors (business sector) to share information and good practices on using PPP to remove the obstacles and facilitate the development of wind energy. Last but not least, it is expected to explore potential cooperation opportunities among APEC member economies in developing wind energy.

II. Background

This project is designed to implement Leaders' and Ministers' notes in 2011 that "We are committed to advancing our shared green growth objectives. We can and must address both the region's economic and environmental challenges by speeding the transition toward a global low-carbon economy in a way that enhances energy security and creates new sources of economic growth and employment." In 2014, APEC Leaders endorsed "the Energy Ministers' aspirational goal to double the share of renewables including in power generation by 2030 in APEC's energy mix."

Furthermore, this project would contribute to the APEC Energy Security Initiative (ESI) as it is the principal mechanism through which the EWG addresses the short and long term energy security challenges in a sustainable manner. In particular, this project is one of the long-term measures (including renewable energy). This project is also in line with EWG Strategic Plan during 2014-2018 as it contributes to EWG's pillars of strengthening energy security, promoting energy efficiency as well as developing cleaner energy sources.

Themes covered during the two-day event included:*(i)Overview on Wind Energy Development in APEC and Worldwide; (ii) The Necessity of PPP for Wind Energy Development; (iii) PPP for Wind Energy Development – Perspectives from the Private*

Sector; (iv) Government's Strategies and Policies on PPP for Wind Energy Development; (v) and Case Studies of PPP for Wind Energy Development in APEC Member Economies.

III. Discussion

Outcomes

The *APEC Workshop on Promoting the Development of Wind Energy, Phase 2 – Public Private Partnership (PPP) for Wind Energy Development*included two days for presentations and discussions on the state-of-play, development and trends of wind energy development; utilizing PPP to develop wind energy as well as its economic impact world-wide and across the APEC region, and recommendations on the way forward. The last session (recommendations for future activities) provided an opportunity to share what participants can take away from the Workshop as well as to suggest potential APEC capacity-building activities to most benefit APEC member economies. Overall, the Workshop achieved its main objectives as described in the project proposal. Moreover, all participants considered that it afforded many chances for valuable networking among representatives from the policy community, academics and private-sector actors in wind energy sector rom within and outside the APEC region.

Key Issues Discussed

Opening remarks

In her opening remarks, **Ms Pham Quynh Mai (Senior Official of Viet Nam to APEC and Deputy Director General, Multilateral Trade Policy Department, Ministry of Industry and Trade, Viet Nam)**, stressed the importance of the Workshop in the contextthat renewable energy in general, wind energy in particular remained a potential alternative energy resource, contributing to ensuring a stable supply of energy, maintaining stability and sustainable development for APEC economies

Ms Pham Quynh Mai stated that to realize the introduction of wind energy into widespread production and use, on a large scale in the region, there are many difficulties and challenges that need to be considered and resolved soon: (*i) High instability due to its dependence on the nature and geographical location; (ii) High costs of investment, maintenance, and uncommonly-used equipment; (iii) A problematic supply chain serving the production of inputs, and commercial development of wind energy; (iv) Low consumers' opinions on superiority and environmental friendliness of wind energy, etc.*

To efficiently address above challenges, it is essential that the government and private sector work together in solving difficulties and maximizing wind energy investment projects. The governments should accelerate investment in national programs, identify and implement the strategies, plans and policies promoting the development of renewable energy in general, wind energy in particular, with the aim of removing difficulties for enterprises to invest more in wind energy projects. Meanwhile, according to Ms Pham, the private sector needs to be more active in proposing their own initiatives, hand-in-hand with the governments in terms of techniques, innovation and finance to

develop this important industry. In that light, wind energy will soon become one of the efficient, sustainable and stable renewable energy alternatives.

The Senior Official expressed hope that with the active participation of scholars, policy makers, representatives from organizations and the private sector in and out of the Asia Pacific region, the Workshop participants would be able to identify and to propose many useful and feasible initiatives, aiming to enhance PPP for wind energy development.

Workshop's sessions

Experts provided presentations on the following topics:

1/ During Session 1 "Overview on Wind Energy Development in APEC and Worldwide", **Professor Terry Surles (Lead for Clean Energy Solutions, University of California/ Berkeley California Institute for Energy and Environment (CIEE) and University of Hawaii/Manoa)** gave a comprehensive presentation on"Comments on APEC, ASEAN, and US Renewable and Ancillary Energy Services Activities – with a focus on Wind". Firstly, Mr Surles discussed the total finance investment for all renewable energy in the world and the investment for solar and wind particularly. Many projects in renewable energy supply in APEC and ASEAN economies have been put in place which leads to a more diverse mix of energy resources being utilized in the region. For the case of US, Mr Surles informed that the energy incentive policy varies by state for example: Tax rebates can be significant in some states and net energy metering and FIT differences create odd mix of new renewable systems in some states. Wind is the second largest renewable energy resource in the US. The cumulative wind capacity is over 65GW and the Power Purchase Agreement (PPA) prices continue to trend downward. Since 2014, wind-related technology/parts imported up slightly and 40% of these were imported from Asia. In the US, wind and solar resources are variable and new technologies, such as energy storage and automated demand response must be utilized to increase flexibility and power quality in electricity supply and delivery. Mr Surles forecasted that current trends in PPA prices for wind should lead to additional development of grid friendly wind power plants.

2/ There are two speakers presented during Session 2 on "*The Necessity of Public - Private Partnership for Wind Energy Development*"**.**

- **Mr John F. Pierce (Partner, Perkins Coie LLP, USA)** presented about the purpose of Public-Private Partnership in renewable Energy in which three important characteristics are sharing the goals, sharing the complementary use of resources (financial capital, knowledge, expertise, human capital…) and sharing risk and rewards. Mr Pierce then spent most of the time during his presentation to point out the roles of different sectors of the economy in developing renewable energy including (i) The roles of Nongovernment Organization (NGOs) in offering leadership and expertise development, policy support, early capital support if possible; (ii) The role of Development bank in giving advisory, leading investor or lenders, giving standard level of approaching capital, promoting export (iii) The role of Central Government in funding mechanisms, permit microcredit, access to NGO lending, providing open access to appropriate data

and land lending/usage; (iv) The roles of local Government in treaties, access to trading environmental attributes, community power and local authorities.

- **Mr Toru Nago (Director of Research and Planning Center, New Energy Foundation (NEF), Japan)** presented about the "Necessity of Public- Private Partnership for Wind Energy Development". His presentation was divided into 6 parts: (i) Introduction; (ii) Exploration for Wind Energy and the role of Government, (iii) Barriers and Challenges, (iv) Towards Successive Growth, (v) International Cooperation of Japan and (vi) Summary. Mr Nagao shared that, the New Energy foundation of Japan was established in 1980 to foster and contribute to business and industry in new and renewable energy. Besides, the Japan Wind Energy Association was also established event early in 1977 to support Japan in developing wind energy. Mr Nagao emphasized that, there were many actions that the public sector and private sector need to support each other and share the workload from preparation stage until the developing stage. The Government will be responsible for wind atlas and resource assessment, subsidy, regulation, building market, community acceptance, public opinion, promote R&D while the private will be responsible for spotting individual wind site, construction, operation, power retail business and wind turbine development. Mr Nagao stated that, still there are further barriers and ongoing challenges that need the public and private sector to have closer cooperation to enhance the effectiveness of developing wind power for example: lack of good wind site, uneven distribution and capacity shortage of the power grid, the un-stability of power supply from renewable energy and the cost of wind power is still very high compare with other traditional energy such as coal and gasoline. To sum up, Mr Nagao concluded that to have successful wind power development, PPP scheme are required to verify new concept of renewable energy, to find solution by cross sector common challenges, to build institution of standard and rules, to prepare of infrastructure and to demonstrate large scale of project. Mr. Nagao also mentioned that international PPP cooperation is important to introduce advanced technologies and institutions from other economies. Mr. Nagao concluded barriers of wind energy introduction encountered in Japan are not indigenous problems and may be common in some APEC economies. Japan will ready to shear their experiences with other economies.

3/ During session 3 on "Public-Private Partnership for Wind Energy Development – Perspectives from the Private Sector and International Organization", there were 2 speakers: **Mr Peter Cowling, Manager, Sales Team for Renewable Energy, General Electric and Mr Vu Quang Dang, Project Manager, Quang Trung International Energy Consultancy Ltd, Viet Nam.**

- Through a comprehensive presentation, **Mr Peter Cowling** shared that APEC region has a good condition to develop wind energy and renewable energy which is a great candidate for PPPs. He stated that without a "partnership", Government can't afford to do large energy project and for private sector, they can't invest themselves. Mr Cowling also mentioned about some areas that the Government

and the private should and should not do. According to Mr Cowling recommendation, the Government should set a long term goals, put in place and effective mechanism to generate demand for wind energy such as tariff incentives, certificate scheme, reserve auction and the Government should put in place clear, stable and long-sighted regulations. For the Private side, they should innovate in development, mobilize capital, take risk, apply technology for better energy solution and find scale for cheaper and profitable outcomes. To conclude, Mr Cowling recommend Government create the market but the competition will do the rest and let the market do the right function.

- **Mr Vu Quang Dang** divided his presentation into 6 parts: (i) Overview of Wind power generation in Viet Nam, (ii) PPP regulation & PPP Projects in Power Sector in Viet Nam, (iii) Wind Power in Viet Nam, (iv) Perspectives from the Private Sector and international Organization in Wind power development in Viet Nam, (v) Recommendation and (vi) Bac Lieu Wind power project (phases 1) – A typical case study for Viet Nam wind power project. Firstly, Mr Vu shared that Viet Nam with more than 90,4 million people leading to the high demand on energy consumption. The electric generation in 2014 was 145.5 billion kWh, increased 10.8% and still under the huge electricity demand of the whole economy. Mr Vu also informed that, on 14 February 2015 Decree No. 15/2015/ND-CP was issued and this Decree started come into force from 10th of April 2015 to regulate Public-Private Partnership in Viet Nam. Viet Nam has done various researches on the wind resources throughout the economy and giving detail of power mapping and measurement. Mr Vu informed that the wind power potential of Viet Nam is at 80 meter high, target at generating 1000 MW in 2020, 6200 MW in 2030. From the perspective of international organization in wind power development in Viet Nam, there are facts that the quality of wind data and feasibility study are non-reliable, the consultant capacity is limited, the infrastructure is insufficient, the Government authority working is slow, interest rate is high .v.v. Mr Vu recommended that, in order to develop wind power in Viet Nam, need to apply higher Fit (Feed in Tariff), provide one stop renewable service with specified transaction duration, create renewable development fund with long term loan and incentive interest rate, public wind power mapping, train local banks on wind power investment. At the end of the presentation, Mr Vu presented a typical study case study of Viet Nam wind power project in Bac Lieu Province with total investment cost 50 million US Dollar, 10 wind turbines, capacity 1,6 MW each turbine. This project was constructed within almost 3 years.

4/ Section 4 on "Government's strategies and Policies on PPP for Wind Energy Development", there were two speakers: **Mr Nguyen Duc Cuong, Director, Institute of Energy, Viet Nam and Mr Eric Pyle, Chief Executive, New Zealand Wind Energy Association.**

- **Mr Nguyen Duc Cuong** presented three main issues including: Legal framework for wind power development in Viet Nam, Update on development of wind

power in Viet Nam and promoting wind power development – New FIT study. Regarding legal framework issue, Mr Nguyen shared that Vietnamese Government has set long term goals on renewable energy development in National Strategies/Master Plans in which renewable energy and wind power in 2020 will be account for 5.6% of total installed capacity and in 2030 will be account for 9.4% of total installed capacity. The Master Plans prioritized the development of power source from renewable energy, gradually increasing the proportion of electricity produce from renewable energy resources and with the aim to implement Viet Nam's Green Growth Strategy and Strategy on Climate Change. Mr Nguyen also provided information on Government support for wind power plan development such as price support to grid connected wind power plan, exemption and reduction of corporate income tax, tax exemption for material importation, incentive for infrastructure and land use etc. Through current support from Government, the development of wind power in Viet Nam has been improved. Some outstanding projects were also introduced in Mr Nguyen's presentation to picture the effort of Vietnamese Government in promoting clean and renewable energy. Furthermore, in May 2015 a new study about FIT (Feed in Tariff) has been completed which reviewed the existing FIT scheme for wind power, determined the reason for the slow development of wind power deployment and provided adequate solution to overcoming existing barriers. To sum up, Mr Nguyen pointed out that the main challenge for Viet Nam is how to harmonize environmental targets integrated in sustainable development and maintaining development targets with high GDP growth rate from 6-7%/year. Viet Nam needs to reform the energy price, identify "Who pay" for incremental of renewable powers and implement more regional cooperation and international support needs.

- **Mr Eric Pyle** shared information on what helped wind grow in New Zealand through a comprehensive presentation. Mr Pyle affirmed that the most important matters to promote wind power are reliable grid system, stable policy, modern wholesale market, designing wind farms to fit the grid and distribution system, planning regime and a strong industry association. There are 19 wind farms in New Zealand, which generate 690 MW, account for 5% of New Zealand annual generation. As the experience from New Zealand, wind is variable but seasonally highly reliable and the forecasting is important. The wind farms should be designed to support power quality in distribution systems and the grid. For the Government role, it is needed to have clear long term policy including electricity market/system that is predictable, clear carbon policies, building expertise in understanding wind and weather, training wind experts and technicians.

5/ During Session 5 on "Case studies of Public-Private Partnership for Wind Energy Development in APEC member Economies", there were four speakers: **Ms Marissa P. Cerezo, Deputy Director, Department of Energy, The Philippines; Professor. Dr Wirachai Roynarin, Rajamanagala University of Technology Thanyaburi Thailand; Mr Chih-Wei Wu, Senior Specialist, Energy Technology Division,**

Bureau of Energy, MOEA, Chinese Taipei; Dr Terry Surles, Lead for Clean Energy Solutions, Hawaii University, United States.

- To begin the session, **Ms Marissa P. Cerezo** introduced about the wind energy development in the Philippines with the National Renewable Energy program until 2030. Ms Cerezo also shared about the FIT rate and criteria applying in The Philippines and also the current status of some renewable projects throughout the economy. From this approach, speaker cited out challenges to the power development in the Philippines are: no established grid connection technical requirements in early development; local financial institution is new to renewable energy; land acquisition; grid penetration limit for VREs and so on. Ms Cerezo recommended some solution to improve the effectiveness of clean power development as follow: finalization of other renewable policy mechanisms; possible auction mechanisms for FIT; establish energy investment coordinating center and linkages with other Government regulatory agencies, resource inventory and establishment of renewable energy database; and capacity building/information, education and communication campaigns.
- **Dr Wirachai Roynarin** approached the issue from the perspective of a researcher and shared information on the innovation of renewable energy power plan to support ASEAN smart grid. The idea of this initiative is to investigate the use of DC power plan system which can be connected the electric system coming from different renewable sources. Dr Roynarin also illustrated some advance system models of DC smart grid system, low speed wind machine, centralized operating control management, operation management center. The result of these systems help to enhance the performance of electricity supply, connect electric system coming from different sources and support ASEAN power grid.
- **Mr Chih-Wei Wu** shared information on Policy and Case Study of Wind Power Promotion in Chinese Taipei. The presentation included: wind resource of Chinese Taipei, current status of wind development, wind power development policy, obstacles and challenges, PPP case, and summary. Firstly, Mr Wu overviewed the wind resource and power development policy of the economy. Significantly, the FIT is effective for 20 years to all electricity renewable and 3.6% extra bonus till 2019 for PPA of onshore turbines completed before 31 December 2019, 15 % extra bonus for PPA of turbines located at islands without any seabed cables to the main grid. For the obstacle and challenges, Mr Wu mentioned about the doubt from local residents and the environmentalists, current regulation regarding nearby residents and the community involvement become crucial for wind power development. Regarding PPP cased, an outstanding project was presented in detail to understand the procedure from the beginning until the completion of a wind power project in Chinese Taipei. In conclusion, Mr Wu emphasized the benefits from wind resources can be shared with all the stakeholders; local government play an important role to communicate with community residents, stakeholders and the wind developers; PPP model creates

a triple-win situation for the community, the wind developers and the government.

- To finish the session 5, **Mr Terry Surles** presented about "Review of Wind Power Initiatives in Hawaii, California, Texas and Iowa". Professor Surles first shared information on some new policies, programs of the State in enhancing the power quality of electricity and the effectiveness of energy usage. He also cited the main actions needed to be in place are consumer training on energy savings and consistent Government long term goals in energy development. Giving examples about renewable energy resources, Professor Surles presented some statistical data on geographic distribution wind power in the US, in which Texas, Iowa and California are evaluated to have the largest wind power resources. Professor Surles emphasized on some important issues such as: energy storage solution to enable enhanced grid stability of power supply and the creation of innovative approaches to clean energy financing. At the end of the presentation, Professor Surles concluded by presenting experience of Hawaii in developing its clean energy initiative. Hawaii has launched many new legislative laws, renewable and energy efficiency portfolio standards, and taxation regulation to promote renewable energy development for long term goal to 2030.

IV/ Conclusions and Recommendations

1/ The consensus view of the Workshop's speakers, moderators and participants agreed that the project achieved its intended objectives. They considered the Workshop to have evaluated to be good for APEC to continue to share and discuss in-depth and various knowledge, experience and challenges on PPP for wind energy development from various APEC member economies. Participants also said that the Workshop had provided a great opportunity for networking with experts from within and outside APEC region.

2/ The Workshop's participants suggested that future activities/ topics should be:

- Develop mechanisms and processes to overcome institution/ policy barriers to wind energy development;
- A regular mechanism (Workshop) to share knowledge and experiences among private sector, academia etc. Should continue this kind of Workshop in next years;
- More discussions on how to put up standards or policies that would ensure facilities can survive in natural disasters (especially for economies with lots of islands). Further studies on wind energy for small islands (mini grid which will be cost efficient);
- Wind and solar energy for rural development;
- Training (2-3 days): for Government officials, financial managers(bankers), utility personnel and management ,and/or consultants from Southeast Asia; training for end-users;
- 16-17 March 2016 in New Zealand conference to discuss resiliency in energy (large and small scale grids have different characters);

- Allow students (especially engineering students) to attend Workshops to learn and benefit. Allow for at least one presentation by students.