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Advancing Free Trade
for Asia-Pacific Prosperity

APEC Workshop on Energy and Economic Prosperity

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APEC Energy Working Group

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Produced by
Ms Pham Quynh Mai
Ministry of Industry and Trade, Viet Nam
Address: 54 Hai Ba Trung street, Ha Noi, Viet Nam
Tel: +8424 2220 5522

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

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I. Introduction

On 28 – 29 March 2019, the APEC Workshop on Energy and Economic Prosperity, (focusing on renewable energy) initiated by Viet Nam and co-sponsored by Australia; Hong Kong, China; Indonesia; Japan; United States was held in Da Nang, Viet Nam. Speakers and participants came from China; Indonesia; Japan; Malaysia; Peru; Philippines; Chinese Taipei; Thailand; United States and Viet Nam. Most of the Workshop participants were from the public sector related to economic and/or energy sector.

The Workshop sought to enhance understanding on the importance of meeting emerging energy demand to the achievement of economic prosperity in the APEC region. It also aimed at presenting available analysis on the changing energy landscape and energy prices on the competitiveness of both consuming and producing economies. Furthermore, the Workshop was expected to provide the opportunities for economic and energy experts from APEC member economies, energy producers and investors (business sector) to share information, good practices and provide recommendations on meeting the challenges of achieving energy market growth, extending services to unserved populations and solving the environmental problems. Last but not least, the Workshop explored potential cooperation opportunities among APEC member economies in developing energy along with enhancing economic prosperity.

II. Background

This project is designed to put into action APEC Economic Leaders' instructions in 2018 to facilitate "energy-related trade and investment, enhancement of access to affordable and reliable energy, and promotion of sustainable, efficient, and clean energy sources, which, in particular, would contribute to reducing global greenhouse gas emissions." In addition, it aimed to implement APEC's Ministers' commitments in 2014 to undertake the followings*:* "Engage the private sector and academia more deeply and frequently in RCE related policymaking to support APEC cooperation and create more cooperative opportunities for RCE industries among APEC economies"; and "We are committed to create an enabling environment for RCE trade and investment to contribute to sustainable development and common prosperity in the Asia Pacific region. We direct officials to develop knowledge sharing and capacity-building activities relevant to implementing these actions, including exchanging views, experiences, and best practices to promote RCE trade and investment".

Themes covered during the two-day event included: *(i) Overview on Renewable Energy (RE) and Economic Prosperity; (ii) Analysis on the Changing Renewable Energy Landscape and Renewable Energy Prices – Perspectives of APEC economies; (iii) How to Meet Renewable Energy Demand of People?; (iv) Roles of Market Liberalization, Governments and Globalization of the Renewable Energy Industry; (v)*

Case Studies in some APEC Member Economies; (vi) Recommendations and the Way Forward.

III. Presentations and Discussions

Opening remarks

In her opening remarks, Ms Pham Quynh Mai (Viet Nam's Senior Official to APEC and Deputy Director General, Multilateral Trade Policy Department, Ministry of Industry and Trade, Viet Nam) highlighted that as a result of significant increase in industrial and population growth in recent decades, there has been a big increase in global demand for energy. Despite rising energy taxes, demand-side interventions, and supply shortage in many economies, world consumption of commercial energy continue to rise. She noted that energy demand in developing economies have risen enormously as per capita incomes and populations grow while energy demand in developed economies is also likely to remain strong, notwithstanding continuing gains in the efficiency with which energy is produced and used.

The Senior Official emphasized that according to a recent research by the United Nations Development Program (UNDP), with population growth in developing economies, more people will require access to modern forms of energy over the next half century. With successful economic growth, world economic product is set to rise 10-fold or more this century, much as it did in the developed economies in the last century. In her view, large increases in world energy demand, therefore, lies ahead in any scenario of economic success.

Ms Pham shared that fully aware of the importance of energy and with views of pursuing the region's prosperity and sustainbility, APEC has undertaken a great deal of efforts to secure the region's energy such as setting a shared goal of reducing APEC's aggregate energy intensity by 45% by 2035, promoting energy supply diversity, especially renewable energy. A range of cooperative and capacity building activities is in place to pursue these goals. In 2017, the APEC Leaders reaffirmed the commitments to "facilitation of energy-related trade and investment, enhancement of access to affordable and reliable energy, and promotion of sustainable, efficient, and clean energy sources, which, in particular, would contribute to reducing global greenhouse gas emissions". The Senior Official provided information that the Energy Working Group (EWG) Strategic Plan 2014 – 2018 also directly reflect this effort by encompassing 4 pillars, one among which is "enhancing trade and investment in all energy sources to promote economic prosperity" by "studying how the APEC region can improve economic competitiveness and achieve sustainable development, while at the same time addressing energy security and environmental concerns".

In her conclusion, Ms Pham expressed the hope that Workshop attendants would learn, exchange and share valuable experience to propose meaningful initiatives and recommendations, which will promote the region's energy security and economic sustainability and prosperity as well.

Workshop's sessions

Experts provided presentations on the following topics:

1/ During Session 1 on *Overview on Renewable Energy and Economic Prosperity*, ***Professor Terrance Surles (Senior Advisor, University of California-Berkeley California Energy and Environmental Institute, USA)*** introduced briefly about Global Renewable Energy Capacity and Global Investment in Renewable. He listed out some fastest growing global wind economies in 2018 including: Argentina (+180% installed capacity), Peru (approx. +50% growth), Egypt (+47%), Viet Nam (+46%), Norway, Thailand, Belgium (+20%). After that, Professor Surles provided some analysis on the US electricity generation by resource in 2018. According to the speaker, natural gas prices stayed the same - $2.77/MBtu in July 2018, now are $2.84 in March 2019, changes in generation capacity in first half of 2018 – continued retirement of coal and natural gas single cycle peakers. In his presentation, Professor Surles shared recent findings in the Department of Energy's Electricity Report – (August 2017). Efficiency and behind the meter (BTM) generation drive electricity sales down, and can impact funding for new upgrades on grid systems. Both energy efficiency technology production and installation and solar technology production and installation each create more jobs than coal. The major addtions to the US grid continue to be natural gas combined cycle generation as well as wind and utility scale solar. Power purchase agreement costs for utility scale PV continue to fall but, concentrated solar power price reductions are limited – green circles on the slide are for PV. Wind power additions continued at a rapid pace in 2017, with 7,017 MW of new capacity, bringing total to 88,973 MW. There was also a discussion on the need to upgrade the electricity grid with new advances in telecommunications, artificial intelligence, energy storage devices, and new monitoring technology to address the need for better management of electricity grids that now have a lot of distributed generation. At the end of the presentation, Prof Surles concluded that consistent government programs are critical for attracting investment.

2/ During Session 2 on "Analysis on the Changing Renewable Energy Landscape and Renewable Energy Prices – Perspectives of APEC economies", there were two speakers in this Session: ***Mr Eric Pyle, Director of Public Affairs and Policy, Solarcity, New Zealand; Dr Nguyen Linh Dan, Researcher, Asia - Pacific Energy Research Centre (APERC), The Institute of Energy Economics, Japan.***

- Mr Eric Pyle presented about achieving 100% renewable electricity generation in New Zealand. His presentation was divided into 5 main parts. In the first part, he provided overview of the New Zealand power system. New Zealand pioneered locational marginal pricing electricity market, later adopted by PJM and others, 75-80% renewable and increasing again, but 90% renewable in 1990, targeting 100% in 2035 as government policy. He also outlined three stages of power system development that include (i) Aim is for everyone to have access to electricity, (ii) Improving efficiency at the transmission level, (iii) The future – moving to a 100% renewable, electrified economy, which will

require a much stronger focus on policy at the distribution level/low voltage level (as compared to the transmission level). In the second part, he presented about renewable energy costs. He shared that wind is a very cost-effective form of generation in New Zealand, as it now is in many economies but little new utility-scale generation being built. Batteries can help "smooth out" variability in solar and wind generation and can substantially improve the efficiency of the power system and improve resilience. The electricity industry in New Zealand continues to over-estimate the cost of renewable generation and batteries, creating a negative view about uptake; initially wind in the early days of the wind industry, now solar and batteries. Part of the reason is that the suite of benefits and revenue opportunities for solar and batteries are not well understood by analysts who have tended to focus on policy at that domestic transmission level, whereas solar and batteries deliver the main benefits at the distribution level. In the presentation, the speaker mentioned about barriers to a smart, clean electricity system including: finance, technical, policy and social issues. Solar, batteries and distributed wind generation could lead to new models for the electricity system being developed that result in a cheaper, more reliable power system.. To conclude the presentation, Mr Pyle suggested some areas that need more improvement to reach the targets of renewable energy economy.

- Dr Nguyen Linh Dan divided her presentation into 3 main parts: (i) Introduction to APERC and the Energy Outlook; (ii) Energy demand in the business as usual (BAU); (iii) Changing in renewable landscape in APEC region. According to her presentation, APERC has some main activities such as: the APEC Energy Demand and Supply Outlook project (priority task), yearly APEC energy overview, oil/gas reports and some other topical studies. It also conducts trainings and data collection, conferences and advisory board meetings. In the second part, she introduced about the 7th edition of the Outlook, which has 10 chapters and three scenarios. Dr Nguyen shared that 21% increased of FED primarily driven by demand growth in south-east Asia, total demand for direct use of renewable stay relatively flat. The growth in south-east Asia is link to a steep increase in per-capita GDP and steady population growth. In the third part, Dr Nguyen presented about changing in renewable landscape in APEC. TGT scenario is driven by APEC's goals of reducing energy intensity while increasing the share of renewable. Renewable show the fastest growth (CAGR 3.4%) driven by variable renewable energy. The APEC renewable doubling goal is to double the share of renewable in the APEC energy mix, including in power generation, from 2010 level by 2030. The speaker concluded that APEC needs 58% more to invest in demand sectors, but will gain 10% in fuel savings.

During discussions, to respond to a question on plans for thermal plants after 2025 in New Zealand, Mr Eric Pyle informed that the target of 100% renewable electricity by 2035 is an election promise and people are debating whether New Zealand can achieve this target. Like thermal plants in the United States, thermal plants are not economic

are being retired.. Comments from speakers and the floor provided information that (i) coal-fired stations in the United States want to be cleaner but costs are too expensive, (ii) The APEC Energy Demand and Supply Outlook, 7th edition which will be published this May will provide more analysis on energy demand and supply.

3/ During Session 3 on "How to Meet Renewable Energy Demand of People?", there were two speakers: ***Mr Chih Wei Wu, Director, Electricity Division, Bureau of Energy, Ministry of Economic Affairs, Chinese Taipei; Mr Nguyen Hoai Nam, Director of Center for Energy System Research at Viet Nam Academy of Science and Technology Institute of Energy Science***

- Mr Wu started his presentation by giving Introduction of renewable energy development, which showed that global climate change and increased atmospheric carbon are raising public concerns around the world. Renewable energy has gained support because of its advantages for the economy and society. Solar energy has a great potential among renewable energy in Chinese Taipei because of falling cost of solar panel, geographic location and the promotion policies. The application of micro grid also is increasing especially in offshore islands and remote areas. He has a short introduction about 2-Year Solar Project for Roof Type (1,055MW), which helps to find out which roofs are suitable for solar power generation. The target of solar roof type is 1,055 MW. By the end of September 2016, the accumulated capacity of the rooftop solar device reached 789.29MW. Other project was also mentioned "Green energy roof and full participation project". Homeowners participating in the green roof scheme not only receive a reward from the FIT, but also improve the view and enhance the roof safety structure. In the second part, he introduced about solar thermal energy for which Chinese Taipei is one of ideally locations to develop the solar thermal energy. After that, the speaker talked about wind power which Increase in capacity in a mere 20 years, the yield of wind turbines has increased 100-fold. About micro grid, Mr Wu said that the micro grid system is a small power supply system that consists of loads and distributed energy resources (DER), such as renewable energy (RE) sources, co-generation, combined heat and power (CHP) generation, fuel cell and energy storage systems(Kim,2015). At the end of the presentation, the speaker shared some information about procurement of renewable energy after amendment of Electricity Act.
- Dr Nguyen Hoai Nam presented about "Experiences and Lessons on Supplying People with more Renewable Energy: the Case of Viet Nam". Firstly, Dr Nam shared about "Energy Sector Landscape" that included domestic electricity demands and energy access in Viet Nam in urban and rural area. To the energy demand outlook, the speaker provided some figures about forecast of total final energy demand in the period 2016-2035. About renewable energy policies and incentives, he introduced some regulation of Viet Nam's government in renewable energy such as: 31/2014/QD-TTg, 24/2014/DQ-TTg, 44/2015/TT-

BCT, 32/2015/TT-BCT. The policies showed that the government aiming toward more renewable energy for the economy than the traditional form of energy. The government also provides support mechanisms for grid connected renewable energy in Viet Nam. By the end of 2018, there were some operating wind projects in Viet Nam such as Tuy Phong, Phu Quy, Bac Lieu (1, 2), Phu Lac, Huong Linh, Dam Nai. Dr Nam also mentioned about the potential of solar and biomass energy in Viet Nam. About energy market, he introduced Viet Nam Electricity Corporation's structure, electricity price (averagely increase), and tariff for customer cluster. At the end of the presentation, the speaker suggested toward more renewable energy supplied for the people that focus mostly on technical, policies, market and tariff restructure.

Discussions:

Responding to a question on the lack of solar energy in Viet Nam (especially in Da Nang) and how to improve it, Dr Nguyen Hoai Nam reiterated that Viet Nam has potentials and incentives to develop solar energy. For solar energy to develop well, the Government should communicate and work together with investors to reduce the costs of solar energy (although such costs are decreasing). Da Nang has potentials to develop solar energy including solar rooftops. According to the speaker, the Prime Minister of Viet Nam decided on a new net mechanism system and there will be more solar energy facilities in Da Nang.

On distribution, a speaker explained that distribution constraint is concerned for renewable energy not only for Viet Nam but also for other economies. It is essential to work with bottle-necks in central highlands and southern provinces in Viet Nam. The speaker stated that according to a study, Viet Nam can only absorb 3,000 MW renewable electricity for in central highlands and southern provinces with current configuration and system. The speaker shared that in Viet Nam, subsidiaries of EVN (Viet Nam Electricity Corporation) are in charge of planning, developing and maintaining the distribution networks while 5 companies are in charge of wholesale of electricity in 5 regions (Ha Noi, Ho Chi Minh, northern-central-southern provinces).

Comments from the floor showed that distribution lines in some economies are old but projects have not been established as people protest. Therefore, it is observed that education should be enhanced so as energy prices would be cheaper from projects.

Regarding reasons that Viet Nam and some economies do not consider large hydro power plants as renewable energy source, it is explained that reasons are political, environmental and historical.

Regarding tips to avoid shocks when there is a plan to increase electricity prices, speakers shared that (i) there should be dissemination plans to mitigate shocks, (ii) in Chinese Taipei, electricity retail price will be review every 6 months and for households, the price will be kept as low as possible.

A comment from the floor highlighted the need to hold APEC workshops on topics of distributing energy.

4/ During Session 4 on "*Roles of Market Liberalization, Governments and Globalization of the Renewable Energy Industry*", there were two speakers: ***Mr Joshua Novacheck, National Renewable Energy Laboratory, Department of Energy, USA; Mr Nguyen Duc Cuong, former Director of Renewable Energy center, Institute of Energy, Viet Nam***

- Mr Joshua Novacheck from NREL presented about Achieving renewable energy growth with power system flexibility and modernization. At first, he talked about grid operation - a matter of balance when supply and demand are both variable and the power system keeps these in balance at all times. Wind and solar also add variability to the supply side. According to the speaker, accessing flexibility is a key objective for RE grid integration. He introduced some frequently used options to increase flexibility. Flexibility reflects not just physical systems, but also institutional framework. The costs of flexibility option vary but institutional changes may be among the least expensive. He shared that market signals can help access flexibility across the energy system, at long term investment and short term operation timescales. Reliable planning requires more high quality temporal and spatial data to characterize diverse generation resources. At the end of the presentation, Mr Novacheck mentioned on some flexibility used to deal with stress such as: curtailment of wind and solar, inter-regional interface flow, re-dispatch of conventional generation in real time, quick start generation and ERGIS demonstrate technical feasibility to deal with system stress.
- At the beginning of the presentation, Mr Nguyen Duc Cuong introduced briefly about the energy growth of Viet Nam which showed that electricity demand growth rate in 2018 is 11.09%, average electricity growth rate from 2010 to 2018: 10.41%/year, Average electricity elasticity to GDP during 2010-2018: 1.79. About the electricity demand of Viet Nam, the speaker said that Average electricity growth rate is still high for the period of 2020-2030. Mr Nguyen shared that there are opportunities and also challenges of RE market in Viet Nam. The government needs to support RE in the areas of: Facilitate the stable development of RE, Introduce strong enough policies, Reduce administrative procedures for the investment process, Provide good infrastructure, Create a equality playing field, Strengthen local contents…Currently, Viet Nam's government have had efforts in Promoting RE Markets when issued some regulation on RE. First FIT was introduced in 6/2011. The impact on the installed capacity is not large. The main reason is low price, the expected installed capacity will be higher than the target level. To conclude the presentation, Mr Nguyen said that RE potential of Viet Nam is large for exploitation and investment. The Government of Viet Nam has given the clear messages to the development of RE resources. It needs to adjust prices and

supplement the support mechanism when the development target set not reached. RE Needs to access to loans (both domestic and international sources)

Discussions:

The speakers highlighted the need to maintain and upgrade the renewable energy system. Mr Nguyen shared that the Government has a key role in fostering renewable energy development, contributing to sustainable development and energy security so they should have pragmatic policies to promote renewable energy. A speaker commented that land utilization of solar energy plants will be higher than that of biomass and wind energy.

Responding to a question on schemes from Government/ banks/ organizations to provide financial assistance for renewable energy projects, one speaker confirmed that such scheme is available but he can not recall it and would provide it later. For Viet Nam, there are technical assistance from USAID, GIZ on developing policies and conducting studies/ feasibility studies for the private sector etc.; there have not been any financing programs for renewable energy projects. In fact, such projects can apply for loans from the Bank for Development of Viet Nam (with 2% lower in interest from commercial banks and longer lending time) but it is difficult to access and lots of criteria to fulfil.

Responding to a question on possibility of foreign direct investment (FDI) companies to operate in Viet Nam, Mr Nguyen informed that it is equal between FDI and local companies. However, for renewable energy projects, paperwork is time and resource consuming while feed-in-tariff (FIT) will be available for 1 year only so foreign investors always cooperate with a local company. For coal-fired/ gas stations, there is no time pressure so FDI companies can work independently.

5/ During Session 5 on "Case Studies in some APEC Member Economies", there were two speakers: ***Professor, Dr Terrence Surles, Senior Advisor, University of California-Berkeley California Energy and Environmental Institute, USA; Associate Professor, Dr Prapita Thanarak, School of Renewable Energy and Smart Grid Technology (SGtech), Naresuan University, Thailand***

- In this Session, Professor Surles presented about "Recent Developments in Hawaii and California – A Look at Successes and Future Challenges (and taking advantage of climate change". Firstly, he introduced some state policies provide for incentives to drive development of renewable energy systems. The speaker shared the ranking of Hawaii in producing renewable energy. He said that the Hawaii Clean Energy Initiative started in 2008 with Agreement between State, HECO, and US DOE called for reduction of fossil energy use of 70% by 2030. RPS: 2020 Goal of 30% to be met by HEI and KIUC, But to reach 2030 goals, with only PV additions, will require 4 kwh storage for every kw PV installed, based on recent model analyses. Hawaii is on track to meet energy efficiency portfolio standard goals – in 2017, energy efficiency added 4% to RPS and Hawaii Is #1 in US for performance contracting. HELCO's

Definition of Resiliency is important when considering an isolated island grid. For California, Professor Surles shared that, this year, peak solar production of over 6,200MW exceeded the peak wind production of 4768MW. In addition to the grid connected renewables, California also has about 2500MW of roof-top solar capacity which is growing by 300-500MW and increasing in pace due to the low cost of solar panels relative to retail rates that are as high as $0.34 /kwh. To conclude the presentation, Professor Surles said that a number of governments have passed legislation for aspirational goals of 100% non-fossil fuel energy utilization. Also utilities – Xcel, HECO, and Idaho Power and Public Service of New Mexico, should they form an organization to work together to make these goals a reality?

- To begin the presentation, Dr Prapita Thanarak had a short introduction about Naresuan Universtiy, which also has activity related to smart grid technology. She shared some information about smart grid transmission line in the future, the Master plan 2008 and project SGtech smart grid development. About the project, the objective is to develop and verify the operation technology which can have stable control in both grid-connected and independent operation change its operation mode smoothly (without power outage). The speaker explained briefly about the SGtech smart monitoring which focuses on electrical exchange identification, two-way power flow concept, real-time energy flow, real-time monthly electricity display cost. She emphasizes that it is a prototype of P2P energy trading platform in the future. In the second part, Dr Prapita Thanarak introduced about P2P Energy Trading Platform, through which the prosumer can buy and sell energy directly between buildings by using block-chain technology with smart metering. At the end of the presentation, the speaker cited some main targets of smart micro-grid such as: to develop the smart micro-grid management model suitable for ASEAN economies; a tool for real-time test base for lecturer research and ASEAN students in the school; to access its system from anywhere and anytime by using Massive Open Online Course (MOOC).

Discussions:

Dr. Thanarak shared that peer-to-peer program applies in school only and will end by the end of this year. The Government of Thailand has some subsidies for solar rooftop programs and nanogenerators are used in not only commercial buildings but also in the community. She also emphasized that her school will keep capacity building and training activities as well as work on monitoring smart grid system.

A comment from the floor shared that the Government of Thailand does not subsidize motorbikes but tuk-tuk (in Bangkok).

Mr Pyle commented that his company in New Zealand is look forward to peer-to-peer and that distribution companies should support peer-to-peer trading..

On climate change, Professor Surles shared that there are conflicts in US Congress on this issue. In California, there are carbon trade legislation. Regional initiatives are also available to reduce carbon emissions.

Regarding smart meter, Dr Thanarak informed that it is also applied (a Chinese company works with provincial authority). A floor commentator shared that it takes 8 years for Peru to change from conventional meter to smart meter (cost of smart meter is very high). A speaker observed that smart meter is a good idea and Internet of Things, artificial intelligence will change all the way we live (however some still refuse smart meter, complaining that "they are watching you"). Another speaker viewed that it would take time to change to smart meter, especially in transforming data and deciding who owns the meters.

Dr Thanarak also shared about the Smart-grid Master Plan of Thailand by 2036 and smart grid utility plays a crucial role in provinces in Thailand. She also commented that it will take a long time for Thailand to popularize smart meters.

Responding to a question from the floor on successes behind renewable energy development in States of California and Hawaii, Professor Surles reaffirmed that reasons are political will, academic pushes (in Hawaii) and ethics (in California), it was also important to enhance efficiency and reduce prices of renewable electricity. A speaker comment that changes can only happen once people and the Government come together; he took example of Norway where 50% of cars are electric.

V/ Conclusions and Recommendations

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

- Continue capacity building on renewable energy;
- Best practices, case studies and field trip in a particular topic;
- Energy initiatives for remote areas and islands;
- Training on a feasibility study for renewable energy projects;
- Involve social media in sharing best practices;
- Develop and implement green policies;
- Enhance EWG cooperation with investment companies;
- Capacity building, share information and experience, a study on emergency plans/ smart grid (update APEC research);
- Capacity building on trade aspects on energy infrastructure (a cooperation with Japan on quality infrastructure);
- Engage more stakeholders to enhance awareness;
- Market transparency;

- Workshop sharing experiences of economies successful in energy market liberalization;
- Energy storage;
- Technologies for large scale solar (saving land);
- Peer-to-peer cooperation;
- How to deal with an isolated system;
- Sharing best practices from developed and developing economies;
- Involve banks (World Bank, Asia Development Bank..) and funds to learn about how to apply for funds;
- Small PV connect and distribution system – how to improve;
- Three innovation trends: electrification, decentralization, digitalization;
- Financing and business models;
- Learn about failures and challenges (participants share in advance of the Workshops and speakers may feedback);
- Resiliency in energy;
- Best practices on policies towards 100% renewable economy.

2/ In the closing remarks, Ms Pham Quynh Mai (Viet Nam's Senior Official to APEC and Deputy Director General, Multilateral Trade Policy Department, Ministry of Industry and Trade, Viet Nam) highlighted that it is important for all APEC member economies to address the current increasing demand for energy, while at the same time meeting the need for environmental protection and mitigating the climate change impacts. According to the Senior Official, each and every member economy will implement their own strategy and goal, towards the achievement of green and sustainable growth. During the Workshop, participants learned that in Chinese Taipei 20% of electricity supply would come from renewable energy by 2025, while New Zealand targets 100% renewable electricity by 2035, other APEC economies will have their different targets. Ms Pham reiterated that it is helpful for member economies in learning from each other experiences and success stories on policies, which facilitate the development of renewable energy, how to raise the awareness of different stakeholders on the importance and the potentials of renewable energy, how to get business sector (potential investors) involved in renewable energy development and investment./.