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APEC PUBLIC – PRIVATE DIALOGUE ON PROMOTING TRADE AND INVESTMENT IN RENEWABLE AND CLEAN ENERGY

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Energy Working Group

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Summary Report

I. Introduction

On 13–14 September 2016, the **APEC Public – Private Dialogue on Promoting Trade and Investment in Renewable and Clean Energy**, initiated by Viet Nam and co-sponsored by Chinese Taipei; Thailand; and the United States was held in Ha Noi, Viet Nam. Speakers and participants came from IEA, representatives from the private sector like The Blue Circle, independent consultant service companies, representatives from China; Chile; Indonesia; Mexico; Peru; the Philippines; Chinese Taipei; Thailand; the US; and Viet Nam.

APEC Public – Private Dialogue on Promoting Trade and Investment in Renewable and Clean Energy was aimed at the following objectives: (i) Identifying impediments, obstacles to the trade and investment in renewable and clean energy from the perspectives of governments, investors, international institutions, finance, and businesses in the sector; (ii) Discussing, sharing experiences and best practices in addressing the impediments to promote trade and investment in renewable and clean energy, which aims at building capacity for governments', local authorities' officials who are directly/indirectly involved in the policy making or implementation process; (iii) Making practical recommendations to APEC on how to promote trade and investment in renewable and clean energy; and (iv) Seeking cooperation opportunities among APEC's member economies and various stakeholders.

II. Background

Energy in general and Renewable & Clean Energy (RCE) in particular have been on APEC's high agenda for the past time given its importance to APEC's stability, security and prosperity. It has been reflected in a large number of APEC's important statements, strategies, and work plans, etc. Most recently among those is the 2014 APEC Ministerial Meetings' annex B "APEC Statement on Promoting RCE Trade and Investment", which clearly states APEC's Ministers' commitments to undertake the followings*: "Promote market openness by further*

addressing trade barriers on RCE products among APEC member economies, work together to fight against all forms of trade protectionism in the RCE sector and deepen our cooperation on monitoring and resisting protectionist measures"; and "*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*".

The APEC Leaders have endorsed the above mentioned APEC Ministerial Statement on RCE.

This project directly responses to the APEC's priority for promoting RCE Trade and Investment as it contributes to addressing the impediments to RCE trade and investment through exchanging views, experiences, and best practices and creating cooperative opportunities for RCE industries among APEC economies.

At the working group level, the Energy Working Group (EWG) has released the Strategic Plan for the period 2014 – 2018. EWG's visions are to "transition to a lower carbon economy through the continued development of cleaner energy sources and technologies, and improved energy efficiency through commercially viable technologies, and effective policies and practices adopted by an ever increasing number of cities and communities". The Strategic Plan also stated to develop cleaner energy sources by "supporting the UN Secretary General's SE4ALL initiative by endeavouring to double the share of renewables from 2010 levels in the APEC energy mix, including in power generation, by 2030 and increasing the number and type of renewable energy projects". Apparently, the project is in line with the EWG's Strategic Plan for 2014 – 2018 as it directly contributes to the goals of significantly increasing renewable energy in the APEC energy mix share through boosting trade and investment in renewable energy.

In line with these, the proposal to hold the APEC Public – Private Dialogue on Promoting Trade and Investment in Renewable and Clean Energy was approved by APEC and held on 13th and 14th September 2016 in Hanoi, Viet Nam. Themes covered during the two-day event included: (i) Overview of trade and investment in renewable and clean energy in the region; (ii Opportunities and Challenges in trade and investment on RCE in some industries; (iii) Experiences in promoting

trade and investment in RCE from the perspectives of regulations, governments' incentives, finance; (iv) Experiences in promoting trade and investment from the private sector in RCE; and (v) Case Studies of trade and investment in RCE.

III. Discussion

Key Issues Discussed

Opening remarks

In the opening remarks, ***Deputy Minister of Industry and Trade, S.R of Viet Nam, H.E. Nguyen Cam Tu*** stressed that according to researches in developed economies, renewable energy accounts forabout 15% of the total energy supply. However, in developing economies, renewable energy is a relatively new and undeveloped field and accounts for a modest proportion of the total energy supply. This is due to the the lack of infrastructure, expertise, practical experience in the management and operation process, the limitation of resources, especially technological and financial resources in the majority of developing economies in the Asia - Pacific. This fact has brought about many challenges for APEC developing members in promoting trade and investment in this field.

In recent years, APEC has been implementing many activities that aims to identify and remove unnecessary barriers to trade and investment in the region and promote investment, increase transparency in this field, especially renewable energy that serve the sustainable development goals. APEC set the goals to reduce the intensity of energy usage in the regionby 45% in 2035 and double the proportion of renewable energy in 2030 following the APEC Leaders' Declaration at the 22nd APEC Summit in Beijing, China.

Dialogue's sessions

Experts provided presentations on the following topics:

1/ Session 1: Overview of trade and investment in renewable and clean energy in the region

Ms. Shelly Hsieh, IEA: Southeast Asia, a key pillar of Asia's growth, remains a mix of countries with disparate energy and economic backgrounds but shares a set of common challenges. There are 123 million people who lack access to

electricity in this region. Renewable energy (RE) remains largely under exploited. The region is heavily dependent on fossil fuels despite high RE potentials. An on-going shift towards clean energy technologies is being driven by policy action & cost reductions. RE is capital intensive but has low operational costs. Regional market for RE can help optimise resources, through e.g: sharing access to diverse RE technologies and resources; balancing intermittent RE as well as support schemes should be coordinated and harmonised. Increasingly affordable renewables are set to dominate the growing power systems of the world. The effect of the lower oil price environment on global renewable growth is more perception than reality, though biofuels are an exception. While integrating VREs is a challenge, energy systems can learn to adapt to this variability. A regional power market can help optimise renewable resources. Wavering policy commitments pose a far greater risk to undermining investor confidence.

Mr Olivier Duguet, Chief Executive Officer, the Blue Circle: Renewable Energy in Southeast Asia (SEA) potential is very important since energy demand in SEA is expected to rise 80% by 2040 driven by population growth, economic expansion and increasing urbanisation (IEA, Nov 2015); RE is already accounting for more than 15% of SEA electricity generation. ASEAN countries have agreed on a target of 23% by 2025 and the bulk of the new renewable capacity will come from hydropower and geothermal power. Laos only plans on adding an average of 1,000 MW of hydro power online per year from 2020 to 2030. New RE (wind, solar, biomass and small hydro) has a big gap to fill in and renewables in SEA are growing at different speed, such as: The Philippines are the most advanced with 25% of total power production coming from renewables and a target of 30% by 2030; Indonesia is still reliant on coal to reach its 35 GW of new capacity to be installed in the next 5 years but raised its renewable share target to 23% in 2025 and 31% in 2050; Viet Nam has a very large renewable potential and has announced a target (ex large hydro) of 6.5% in 2020 and 10.7% by 2030 for new renewable capacity in its mix; Malaysia is highly reliant on fossil fuels today but has a target of 9% of its total energy production by 2030; Laos is already exporting 90% of its power to its neighbours and has 70 dam projects under construction or under permitting; Cambodia is mainly using biomass to cover 72% of its energy needs as of today; and Myanmar plans on hydro power to help its electrification effort and target hydro to represent 38% of total installed capacity by 2030 down from 69% today.

2/Session 2: Opportunities and Challenges in trade and investment on RCE in some industries

***Ms Shelly Hsieh, IEA**:* The share of renewables in net additions to power capacity continues to rise with non-hydro sources reaching nearly half of total world net additions. As the OECD slows, non-OECD countries for 2/3 of renewables growth, driven by fast-growing power demand, diversification needs and local pollution concerns. Hydropower contributes to 80% in 2013 of all renewable electricity sources but non-hydro is expected to grow 30% in 2020 from 20% in 2013, and over 30% of global geothermal generation is expected to come from ASEAN – notably Indonesia and the Philippines. The cost of wind and solar PV has seen significant reductions over recent years, record renewable capacity additions in 2014 and 2015 – led by wind. A combination of price competition, long-term contracts, good resources and financial de-risking measures is creating deployment opportunities in newer markets and at lower costs. High level of incentives is no longer necessary but their economic attractiveness still depends on the regulatory framework and market design. Innovative policies are needed to stimulate system-friendly renewables deployment. In SEA, attention needs to be paid to the balance between fossil fuels and RE. Power market integration can support RE deployment. There are operational benefits to supporting intermittent RE with dispatchable RE. Establishing an ASEAM Power Grid can optimize access to and usage of geographically dispersed RE resources in SEA. Power planning and support schemes need to be coordinated and harmonized. Potential in trading electricity via integrated grid (pilot: Laos – Thailand – Malaysia – Singapore project). IEA is supporting ASEAN governments on developing an integrated power market in ASEAN.

***Dr Neil Sebastian D' Souza, Principal Consultant (Energy Economics and Policy) Argus Consulting Services – Asia – Pacific and the Middle East**:* Dr Neil focuses on the opportunities for biomass, especially the wood pellet industry. The demand for biomass in Japan and South Korea is expected to grow substantially, both at a rate of around 18 pc per annum. Trade patterns suggest that movement of cargoes tends to be intra-regional rather than inter-regional. Economies such as Indonesia; Malaysia; Thailand; and Viet Nam have an opportunity to grow their wood pellet as well as palm kernel shell industries to complement the policies of Japan and South Korea whilst developing policies to incentivize biomass use at home. Some challenges include: adhering to a transparent pricing; having stable policies and regulations; and Transparency and the adoption of best practices. His recommendations are: i) Governments could adopt regional market-based price benchmarks that would ensure that buyers and sellers see a fair market price of the fuel; ii) uncertainty retards investment. Given that the biomass industry is highly dependent on trade and cooperation between economics, it might be useful to form an industry body that also has representatives from policymakers to best

develop the industry; iii) economies in the Asia – Pacific region can learn from the experience of economies that have built up a reputation for providing high quality wood pellets/biomass and hence raise their economy's "brand" as a supplier of high quality product.

Mr Nguyen Thanh Quang – EVN Viet Nam: He shares challenges and solutions in performing some energy projects: In Tal Tal Wind Farm in Chile which is located on a remote area at Atacama Desert, with adverse weather conditions and a tight planning to comply with, this wind farm places strong logistics challenges. A well planned procurement strategy, proper resources allocation and creation of onsite welfare facilities enable the compliance with the works schedule and performance. Related to Lotnisko Wind Farm in Poland, the works were performed during winter time without any break. The UHVL goes through mainly PKP area and passed many tree areas. A total of 3.9 km of drillings works are performed, thus avoiding trees cutting and infrastructure damages. Related to Los Loros PV Plant in Chile, Los Loros PV Plant is an ambitious project with a tight schedule combining a special meteorological and geological condition due to the location in the Atacama Desert. In Kyaia Self-Consumption PV Plant in Portugal, Kyaiais an ambitious project with a tight schedule combining latest technology for carpark implementation and roof top particular conditions for structure assembly. CJR Solar has a dynamic team which is favourably overcoming the challenges.

3/Session 3: Experiences in promoting trade and investment in RCE from the perspectives of regulations, governments' incentives, finance, etc.

Ms Bethany Speer, National Renewable Energy Laboratory (NREL), USA: Ms Bethany shares the information that the Clean Energy Ministerial (CEM) launched the Clean Energy Solutions Center in 2011. The Solutions Center is one of among CEM Initiatives, e.g.: (i) International Smart Grid Action Network; (ii) Global Superior Energy Performance Partnership; (iii) 21st Century Power Partnership; and (iv) Global Lighting and Energy Access Partnership. This center will help governments design, adopt and implement policies and programs that support the deployment of clean energy technologies. It has more than 35 partners, including IEA, IPEEC, Sustainable Energy for All, Bloomberg New Energy Finance, IRENA and Leonardo Energy. It is co-chaired by the U.S. Department of Energy, the Australian Department of Industry, Innovation & Science, the Swedish Energy Agency, and USAID. Solutions Center experts can provide various levels of support depending on the complexity of the request, from 1 hour

to 120 hours. It can support APEC's Goal of Doubling Renewable Energy by 2030.

Mr Tran Huy Hoan, Institute for Trade, Viet Nam: Mr Hoan shares RCE's current development in Vietnam: *Wind project*: 42 wind projects with capacity between 6MW and 150MW, onshore and offshore, 03 projects in operating within stalled capacity of 52 MW, connected to national grid; *Solar project*: 60 organizations, 5.000 household installing roof solar panel system for heating, 90% in the city, 99% household investment; *Solar energy for electricity*: 4.000 households with capacity up to 4 MW and there is no commercial project; *Biomass*: 41 projects in operating withcapacity of 150 Mwe**;** *Biofuel E5***:** 175 petro stations, 34 provinces and cities, 30% enterprises involving, 1% national market petro gas in 2015. Viet Nam also installs power capacity structure by ownership in 2014. There are some general support mechanisms and policies for RCE development: (i) Prioritizing investment and use of RCE with a focus on building Viet Nam's RCE market; (ii) Supporting all organizations and individuals with a variety of ownership structure to participate; (iii) Applying various fiscal incentives, credit incentives, legislation applicable to special preferential projects and preferential investment projects;

Mr Joachim Monkelbaan, Independent Consultant: Mr Joachim focuses on promoting trade and investment in RCE from the perspectives of regulations, governments' incentives, finance, etc. The Environmental Goods Agreement (EGA) is a trade agreement that is currently under negotiation among a number of countries. The negotiations on the EGA are expected to be finalized by the end of 2016. In his presentation, Mr Joachim also talks about potential environmental impacts of the EGA, they are: (i) dependent on scope and coverage of the EGA; (ii) Important systemic impacts; (iii) Shows that environment worthy of its own trade agreement; (iv) Impact on GHG emissions: 0,1 – 0,9% (Wooders,2009). For China: minus 0,8%; (v) IMF: removal of fossil-fuel subsidies would reduce global carbon dioxide emissions by13%. Trade Sustainability Impact Assessment on the Environmental Goods Agreement was published online in April 2016.

Ms Maria Rosario Socorro Julongbayan-Senior Science Research Specialist-Technical Services and Management Division, Renewable Energy Management Bureau, Philippines: Philippines Energy Policy Thrusts: ensure energy security, expand energy access, promote low-carbon future, climate proof the energy sector, develop regional energy plans. Ms Maria also provides Philippines's strategic plans period of 2016-2020: Promote low carbon future, pursue development and implementation of regional energy plans, practice

climate change adaption and disaster readiness/preparedness, and promote investment in infrastructure development. On the other hand, there are some landmark laws: Republic Act number 9367 provides fiscal incentives and mandate the use of biofuel-blended gasoline and diesel fuels and Act number 9513 accelerates the development of the country's renewable energy resources by providing fiscal and non-fiscal incentives to private sector investors and equipment manufacturers/suppliers.

4/Session 4: Experiences in promoting trade and investment from the private sector in RCE

Mr Edgardo A. Alfonso, Chief Operating Officer, San Jose City I Power Corporation, the Philippines: the Philippines launched the NATIONAL RENEWABLE ENERGY PROGRAM (NREP) in 2011 detailing the RE development strategies and installation targets. It has the following functions: (i) Recommends specific actions to facilitate the implementation of the NREP to be executed by the DOE and other appropriate agencies of government and to ensure that there shall be no overlapping and redundant functions within the national government department and agencies concerned; (ii) Monitor and review the implementation of NREP including compliance with RPS and minimum RE generation capacities in off-grid areas.

Dr Neil Sebastian D'Souza, Senior Manager (Asia-Pacific and the Middle East), Consulting Services: Argus is a leading provider of business intelligence, price assessments and market data for the global energy and commodity industries. Argus was founded in 1970 and is an independent, privately held company. Today it offers over 120 products and services to a global client base. Argus offers advice to firms and governments on the renewable energy policy and projects. On the other hand, the speaker also mentions policy formulation to encourage private sector participation in RCE. They are : (i) well-defined problems: the need to clearly define the policy problem and the rationale for government intervention; (ii) Cost-benefit analysis: assessing the full range of social costs and benefits of the proposed policy options through a regulatory impact assessment or RIA (i.e. benefit/cost analysis); (iii) transparency and public consultation: help enhance the quality of rules, strengthens compliance, and reduces enforcement costs for both government, the private sector and citizens subject to rules; (v) alignment of policies: this reduces the potential for overlapping and potentially conflicting objectives; (vi) periodic review: the need for regulatory review/ex post analysis to ensure the on-going efficacy of existing regulations.

Mr Wan Lin, EGNRET China Representative: Mr Lin presents China experiences in promoting trade and investment from the private sector in RCE: (i) Actions of Government: formulate and implement clean Low-carbon Energy-revolution strategy and action plan, which prioritize Renewable Energy; establish power market mechanism adaptable to handle renewable power; improve the green tax system and carbontrading market system to create a fair playing field for renewableenergy; establish sound systems of legal protection, comprehensive management and professional regulation adaptable to renewable energy development; (ii) Actions of renewable energy industry: build major public R&D plaforms, strengthen technology R&D, and accelerate industrialization process; keep sustained large-scale development of renewable power generation; fully promote renewable energy heating and fueluse; (iii) Actions of powersector: build a new-type of grid publicserviceplaform, optimize the deployment, structure and operation of flexible power; develop demand response mechanisms and energy storage in a large scale.

5/Session 5: Case Studies of trade and investment in RCE

Ms Bethany Speer, National Renewable Energy Laboratory (NREL), LEDs Global Partnership (LEDs-GP): Bethany presents the case study of accelerating investment in NDC, which means building new assets and businesses that deliver goods and services humanity needs while lowering greenhouse gas impacts and providing additional benefits to society. It is believed that governments can enable private sector investments by reducing and shifting risks. LEDS-GP builds strong relationship with governments around the world and provides broad technical assistance capabilities including and linking together policy technical assistance, project pipeline development support, and a network of investors and power purchasers. By policy technical assistance, LEDS-GP provides support to developing country governments to conduct a rapid scan of existing policy and regulatory barriers impeding scaling of private sector finance and achievement of implementation goals for a priority NDC clean energy sector. LEDS-GP also facilitates collaboration and develop innovative blended capital facilities by creating a network of public and private sector intermediaries to provide finance facilities and technical assistance to renewable energy project developers; and working with countries, and public and private sources of capital to design and fund blended capital facilities that will provide working capital (grants, loans, equity, etc.) for clean energy projects and businesses. LEDS-GP also brings committed purchasers with large-scale buying commitments to unlock significant climate finance by leveraging successful existing platforms, including those being

developed under the Renewable Energy Buyers Association by the World Resources Institute (WRI) and partners in emerging economies to secure large scale, aggregated clean energy power purchase commitments. LEDS-GP has pilot projects in Dominican Republic, Mexico, the Philippines, and Viet Nam.

Mr Olivier Duguet, Chief Executive Officer, The Blue Circle: The Blue Circle is a Southeast Asia leading project developer, building a Renewable Only Independent Power Producer, with a main focus on wind power. There are different business models which have different investment objectives and exit strategies (pure developers; independent power producers; investment funds; and equipment manufacturers). Key metrics to look at before an equity investment into renewable energy project are: resource assessment, land rights, footprint and access, local community support, quality of the off-taker. In the South East Asia, renewable energy development is facing some difficulties. The key issues for the whole region are long term non recourse project financing; bankable PPA; and lack of renewable energy resource or low Feed-in-Tariff .

Mr Joachim Monkelbaan, Independent Consultant: Mr Monkelbaan presents 2 case studies: (i) solar tuk-tuks in Cambodia; and (ii) wind power in Kenya. In Cambodia, renewable energy development especially solar and hydropower is potential though in 2011 it just supplied 6% of Cambodia's generated energy. There are approximately 10,000 gasoline tuk-tuks in Phnom Penh, therefore, the adoption of solar tuk-tuks on wide scale could result in reduced air and water pollution and better health for both urban and rural residents. In Kenya, stabilizing electricity supply (constant wind) could help save of 100 million euros each year. At the moment, 45% of electricity in Kenya is from hydropower and 35% from fossil.

Mr Galo Galeana Herrera, Director General of Energy and Extractive Activities, Mexico: Mexico has built up a national development plan to pursue inclusive green growth, preservation of natural heritage, sustainable and sustainable low-carbon growth through a legal framework, which includes the General Climate Change Law in 2012; the Intended Nationally Determined Contribution (iNDC); the Electricity Industry Act; and the Energy Transition Law. In transport sector, this sector is estimated to have the highest energy consumption reaching 2.248 PJ in 2010, representing 46% of the final demand at national level. In 20135, GHG emissions are estimated 415.1MtCO2e, an increase of 162% compared to baseline and an energy requirement of the sector amounting to 5,879 PJ. In Mexico, the reduction of transport emissions are applied based on 4 basic elements: avoid or reduce the number of trips; switch to more efficient

modes of transportation; improve current technologies and fuels; and use new technologies and clean fuels.

Mr Cheng-Yuan Weng, Specialist, Bureau of Energy, Chinese Taipei: Mr Weng stresses that the promulgation of Renewable Energy Development Act (REDA) (issued in July 2009) and related regulations has paved the way for a sustainable long-term development of renewable in Chinese Taipei. The core strategy of the REDA is a Feed-in-Tariff system, which should be reviewed annually, referring to technical advancement, cost variation, goal achievement status, etc. Chinese Taipei sets the target of increasing the share of renewable energy generation to 20% by 2025, in which Solar GV is 20 GW and offshore wind power is 3GW. So as to promote RCE, financing is deemed as one important element. Chinese Taipei establishes a PV-ESCO mechanism which encourages banks to participate in project financing and to provide soft loans to PV-ESCO players.

IV. Recommendations and Conclusions

The Dialogue brings about the opportunities for stakeholders to raise their voices on how to promote trade and investment in RCE and especially how to promote the private sector in RCE.

Recommendations

Through the sharing of experiences and case studies among APEC member economies at the Dialogues, speakers and participants have shared views on how the member economies' governments facilitate trade and investment in RCE.

- The Governments should think beyond the borders. Policies should encourage trade and investment on RCE based on the best practices. The Governments might also focus on sub sectors with specific technical assistance which are their advantages rather than to develop generally.
- Governments should focus on financing as one of means to promote trade and investment in RCE. Providing guarantees to private sector banks could be a very cheap and very effective way to promote RE growth in SEA. Having public sector banks leading RE financing with clear mandates should be a favored.
- Governments should strengthen public and private collaboration (PPP) in development of RCE through facilitating mechanism to promote the private sector's involvement (private bank, public financing, etc.,).

- Governments should provide technical capacity building for project implementation from the start up.
- Governments consider developing supporting industries and cooperation in supporting industries to promote trade and investment in RCE.
- Develop a guideline/framework for PPP in trade and investment in RCE.
- Ensure the stable and predictable regulatory environment and harmonize the policies on renewable and clean energy.
- Develop the renewable energy for household and increase the participation of women in RCE industries.
- Enhance awareness of gender and inclusive dimensions and facilitate women's involvement inconceptualization and implementation of renewable energy projects.
- ASEAN as a whole can consider establishing a database of all renewable power investment opportunities in ASEAN member economies.

Regarding how APEC could further its roles in building capacity for the member economies in promoting trade and investment in RCE:

- Collect best practices on promoting RCE projects which contain experiences on how to reduce cost/ model of cost reduction, and how to harness potential benefits, etc.
- There should be assessment of RCE technologies among APEC member economies and other regions for sharing.
- Energy efficiency should be considered as one important factor while promoting RCE; and there should be peer review on RCE development in the APEC region.
- APEC should develop a policy framework for technology transfer cooperation.
- Develop a guideline/framework for PPP in trade and investment in RCE in the APEC region.
- APEC should promote trade RCE among APEC member economies.
- APEC should develop APEC data platform to calculate the cost and transport loss among economies.
- Develop APEC collaboration platform mechanism (data, benchmark, …)
- APEC should provide technical training courses such as seminar on RE project financing to public sector banks, State-owned enterprises (SOEs) & privatization; platforms to share information with investors; capacity building for human resources; raise technology awareness of RCE, etc.

- APEC might provide assistance to its individual member economy or promoting assistance based on bilateral relations including identifying the needs, shortages, etc.; and organizes regional trainings.
