

APEC EXPERT GROUP ON NEW & RENEWABLE ENERGY TECHNOLOGIES (EGNRET)

51st Meeting and Associated Meetings

Summary Record

Chiang Mai, Thailand

10-14 September 2018

1. Introduction

The 51st Meeting of the APEC Expert Group on New and Renewable Energy Technology (EGNRET 51) and 52nd Meeting of the APEC Expert Group on Energy Efficiency & Conservation (EGEE&C 52) and the Associated Meetings were held in Chiang Mai, Thailand on 10th to 14th September 2018. In addition, two APEC project-related workshops were held alongside the meetings, namely, “APEC Workshop on Off Grid Electrification Option for Remote Regions in APEC Economies” and “APEC Workshop on Refrigerator/Freezer Energy Efficiency Improvement in APEC Region: Review of Experience and Best Practices”.

2. Joint Meeting between EGNRET and EGEE&C

The joint meeting was chaired by Mr. Gavin S.K. Yu, the Chair of EGNRET, Mr. Pengcheng Li, the Chair of EGEE&C and co-chaired by Ms. Munlika Sompranon, Director of International Cooperation Section,

Department of Alternative Energy Development and Efficiency (DEDE), Ministry of Energy, Thailand. Attending APEC member representatives were from People's Republic of China; Hong Kong, China; Japan; Republic of Korea; the Philippines; Singapore; Chinese Taipei; Thailand; and United States. In addition, representatives from Asia Pacific Energy Research Centre (APEREC), International Copper Association Ltd. (ICA), International Renewable Energy Agency (IRENA), the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) and BCPG Public Company Limited were invited to participate in the meeting.

Mr. Yu, EGNRET Chair, and Mr. Li, EGEE&C Chair, welcomed the delegates and opened the meeting, and Ms. Naunjan Tachasemsukul, Deputy Director General of Department of Alternative Energy Development and Efficiency, Ministry of Energy, Thailand gave an official welcome to the delegates on behalf of the host economy, Thailand. Then, Dr. Prasert Sinsukprasert, Inspector, Ministry of Energy, Thailand gave a speech that covered the trend of energy transition including ASEAN LNG Outlook, utility scale PV, wind power, the future of ASEAN smart cities and the key drivers for energy investments.

■ Invited presentations

Seven invited presentations presented in the joint meeting are listed below.

- “APEC Secretariat Report” by APEC secretariat (presented by Dr. Liu Ren, secretary of EGEE&C)
- “Updates on Sub-Committee on Standards and Conformance

(SCSC)” by SCSC (presented by Dr. Liu Ren, secretary of EGEE&C
“Updated development of APEC Energy Working Group” by EWG
secretariat

- “Overview of APERC Activities” by APERC
- “APEC Energy Resiliency Task Force” by ERTF
- “Role of ESCAP and the Energy Division” by UNESCAP
- “IRENA brief introduction” by IRENA

All invited presentations are available on EGNRET website at:

<https://www.egnret.ewg.apec.org/en/meetings/egnret51/index.html>

■ **Discussion-** Key Areas for Collaborative Actions between EGEE&C
and EGNRET

This topic was discussed in the joint meeting with EGEE&C. Firstly, EGNRET Chair introduced some suggested approaches for cooperation between renewable energy and energy efficiency, then Dr. Nuwong Chollacoop, Thailand’s delegate made a presentation to show the best practices in energy efficiency and renewable energy technologies in the industrial sector in APEC region. Furthermore, IRENA also shared their experience regarding the synergies between renewable energy and energy efficiency and introduced their related publication. The cooperation could include the building, transportation, industry and heating sectors. EGNRET and EGEE&C delegates are welcomed to share any ideas and suggestion to the secretariats if they didn’t mention in the meeting.

EGNRET Chair suggested to set a specific topic of the cooperation between renewable energy and energy efficiency for building, transportation, heating sectors in each EGNRET and EGEE&C joint meeting. Therefore, EGNRET and EGEE&C members can prepare materials before the meeting and join together to discuss and share the viewpoint from renewable energy and energy efficiency.

In addition, IRENA representative said that the linkage between renewable energy and energy efficiency is not only to affect the electricity load by improving the end-user efficiency but apply advanced technology to achieve technical efficiency.

Delegates' suggestions were listed as follows:

- Many buildings have become energy producers and conserve energy efficiency. Smart grid and ICT are also the link to energy supply and demand between efficiency and renewables.
- Building is a good topic to bring these two experts groups together, and many economies have set their goals to develop zero energy buildings.
- Collect business models and policy implications since implementing appropriate policies and regulations can increase the energy investment and drive energy transition.
- Remove the renewable energy trading barriers in APEC region.

- Establish renewable energy credit trading between APEC economies.
- The financial mechanism could stimulate renewable energy and energy efficiency development; for example, China progresses in green finance for the energy efficiency and renewable energy.
- Member economies have been encouraged to consider for having the joint activities in these fields.
- The member economies were tasked to send their comments/ideas to working group secretariat for setting priority of working areas regarding energy efficiency and renewable energy.

3. EGNRET Meeting

■ EGNRET Pre-meeting

Mr. Yu, EGNRET Chair welcomed the delegates and opened the meeting. The EGNRET pre-meeting was held on 10 September, 2018. Mr. Yu introduced the purpose of the pre-meeting was to gather EGNRET members to share current status, target and current issues on renewable energy, since each APEC economy has different situation, environment, policy and market, and it is difficult to find common direction for the renewable energy doubling goal. Therefore, the main challenges and common issues will be collected and discussed in this pre-meeting, and try to find out solutions and directions.

EGNRET members shared their progress of renewable energy development including their renewable energy targets, renewable energy policies and main challenges in promoting renewable energy. Each economy has different challenges on promoting renewable energy. In order to step towards the goal of doubling the renewable energy share and promote renewable energy in APEC region, EGNRET discussed what key issues were to conquer and work together. These issues could be summarized into the following aspects: data and information collection, technology (cost reduction, grid connection, sustainable power supply, etc), business model and building market, social acceptance, space for installing renewable energy facility in cities, financial mechanism and capacity building.

■ Invited Presentations

Four invited presentations presented in the EGNRET meeting are listed

below.

- “APEREC Update for EGNRET 51” by APERC
- “Energy Transition in Asia and the Pacific” by UNESCAP
- “Global Energy Transition” by IRENA
- “Blockchain and Power Trade as P2P Energy Trading” by BCPG Public Company Limited.

Please refer to the link below to access the presentation files.

<https://www.egnret.ewg.apec.org/index.php/en/meetings/egnret51/index.html>

■ EGNRET Projects Report

Japan representative, Mr. Takao Ikeda introduced a Japan self-funded project “APEC Workshop on Quality Electric Power Infrastructure Focusing on Waste to Energy”. The workshop is planned to be held in January, 2019 and intends to enhance the capacity of the APEC members to understand quality waste to energy power plant and improve 3E+S of waste to energy in the APEC region. The summary of the workshop will be presented at the EGNRET meetings

U.S. representative, Dr. Cary Bloyd, introduced two projects proposed by U.S., one is APEC funded project “Low Emissions Development Strategies: Supporting the transition to energy efficient, electric transport systems” and the other is self-funded project “Ethanol’s Role in APEC Energy Access.”

EGNRET delegates supported these projects and are willing to send ideal



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experts to participate when they hold the APEC workshops.

■ Review Terms of Reference (ToR)

The Terms of Reference (ToR) of EGNRET was discussed and revised in the EGNRET 51 meeting. The sentence “Under the majority rule, the elector is the Economy Representative following one Economy one vote” in the ToR was revised to operate on the APEC’s principle of consensus-based approach.

Hence, the section 4.2 in the EGNRET ToR was suggested to separate into 4.2 and 4.3 which 4.2 elaborates the principle for EGNRET Chair and Vice Chair’s election and 4.3 shows the function of EGNRET secretariat. Furthermore, the section 4.5 in EGNRET ToR is added to explain the host economy for EGNRET meeting. The revised ToR will be circulated for endorsement by EGNRET representatives as shown in annexes

■ Member Economy Presentations: Microgrid System – Energy Management and Storage

The EGNRET 51 meeting has set “Microgrid System – Energy Management and Storage” as the topic to share the development of microgrid, energy storage and renewable energy technology among APEC economies. Member economies introduced their new energy micro-grid demonstration and pilot projects, current development and challenges.

All EGNRET 51 meeting presentations are available on EGNRET



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website at:

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■ EGNRET Project Update

The EGNRET has a variety of projects underway to facilitate the use of renewable energy technologies in the APEC region.

Currently, 2 EGNRET projects have been completed since EWG 55, and 7 APEC funded projects and 2 self-funded projects (proposed in 2018) are on-going. In addition, 1 project proposal has been endorsed by EWG members for Session 2, 2018. The above projects are listed below.

(1) Completed Projects in 2018 (2 projects)

	Project Title	Proposed Economy	Project Number
1	Guidelines toward High Biodiesel Blend Diesel (eg B20) Specification in the APEC Region	Thailand	EWG 20 2016A
2	APEC Peer Review on Low-Carbon Energy Policies (PRLCE), Phase 4	Japan	EWG 01 2017A

(2) On-going projects (9 projects)

	APEC-Funded Project Title	Proposed Economy	Project Number
1	Empowering a Distributed Energy Resource Future through Regulatory and Market Reforms	Thailand	EWG 11 2017A
2	Integrated energy system planning for equitable access to sustainable energy for remote communities in the northern regions of North Sulawesi	Australia	EWG 13 2017A
3	Making the Case for Clean Energy Investments with Life-Cycle Impact Assessments	USA	EWG 02 2017A

APEC-Funded Project Title		Proposed Economy	Project Number
4	Economic and Life Cycle Analysis of Solar Photovoltaic Systems in APEC Region toward Low-Carbon Society	Malaysia	EWG 06 2017A
5	Study on the Cost-Effective Renewable Energy-Supply Solutions based on Innovative Solar Technologies to Promote Green Buildings in APEC Region	China	EWG 03 2016A
6	Off Grid Electrification Option for Remote Regions in APEC Economies	China	EWG 07 2016A
7	Promoting innovative green financing mechanisms for sustainable urbanization and quality infrastructure development in APEC region	China	EWG 09 2016A

Self-Funded Project Title		Proposed Economy
1	APEC Workshop on Quality Electric Power Infrastructure focusing on Waste to Energy	Japan
2	Ethanol's Role in APEC Energy Access	USA

(3) Approved Proposal for S2, 2018

	Project Title	Proposed Economy
1	Low Emissions Development Strategies: Supporting the transition to energy efficient, electric transport systems	USA

- **Discussion** -The Suggestions of Cross fora / non-APEC organizations cooperation regarding Achieving Doubling Renewable Energy Goal

EGNRET secretariat made a presentation to introduce the background of the doubling renewable energy goal in APEC region and also share what EGNRET has done to contribute to this target. Afterwards, APEC EGNRET members discuss the further cooperation with APEC fora and non-APEC organizations regarding the APEC renewable energy doubling goal.

EGNRET will keep cooperating with APEC fora including APERC and EGEDA. APERC will publish the latest version of APEC Energy Demand and Supply Outlook in 2019, and the APEC renewable energy roadmap could use the information and forecasting data which provided in the publication to envisage the APEC renewable energy roadmap. EGNRET will also continue cooperating with EGEDA regarding tracking the renewable energy development in the APEC region.

Delegates suggested to share what APEC/EGNRET has done for the renewable energy roadmap. Besides, UNESCAP and IRENA shared their experience about developing renewable energy roadmap. UNESCAP suggested to understand what is the expectation from APEC members for the renewable energy roadmap and what should be included in the output before EGNRET starts to plan the next steps. Moreover, IRENA suggested to consider the economic and environmental benefits such as job creation, employment, air pollution and CO₂ emission reduction when

APEC develops renewable energy roadmap. Considering those factors could be the tool to convince policy makers to increase renewable energy development, IRENA will be happy to provide methodology and related information.

Furthermore, EGNRET members also discussed with IRENA and UNESCAP to seek future cooperation. UNESCAP & IRENA are keen to cooperate with APEC EGNRET for contributing RE Doubling Goal, and will find out specific cooperation area together.

■ Administration and Operation

(1) Elections of Chair and Vice Chair

According to the EGNRET ToR, the elections were held at EGNRET 51 for the positions of Chair and Vice Chair of EGNRET for the next two years (2019-2020).

Dr. Tom, H. T. Lee from Chinese Taipei has been elected as the EGNRET Chair, and Ms. Munlika Sompranon from Thailand has been elected as the Vice Chair to serve a two-year term. In addition, the term of Chair and Vice Chair of EGNRET is discussed in the EGNRET 51 meeting. APEC EGNRET members have consensus that the elected Chair and Vice Chair will be on duty after the EGNRET 51 meeting and end his/her duty till the next election.

Furthermore, the elected Chair, Dr. Lee, nominated 4 secretaries, Dr. Shin-Je Li, special assistant at Green Energy and Environment Research Laboratories (GEL) at Industrial Technology Research Institute (ITRI), Mr. Jimmy Cheng-Nan Chu, manager of Green Energy Initiative Division, GEL, ITRI, Dr. Tarcy Sih-Ting Jhou, administrator at GEL, ITRI and Dr. Keng-Tung Wu, consultant of ITRI to hold the EGNRET secretariat after EGNRET 51. It was endorsed by EGNRET representatives.

The Chair invited Dr. Lee, the elected EGNRET Chair, to attend the coming EWG meeting to report EGNRET's progress on behalf of EGNRET, and it is endorsed in the EGNRET meeting.

(2) Coming Events and Next Expert Group Meeting

The representative of Hong Kong, China announced that the next EGNRET meeting (EGNRET 52) will be held in Hong Kong, China in March or April 2019. The next EGNRET meeting will be a joint meeting with EGEE&C. The host economy also welcomes APEC EGNRET members to send the request to arrange APEC workshops alongside the expert group meeting. The venue and date of the EGNRET 52 meeting will be determined later. The delegates suggested Hong Kong, China to set the meeting theme regarding renewable energy development in cities in the next meeting. The Chair encouraged delegates to submit their suggested meeting theme for the next meeting to the EGNRET secretariat.

The representative of Republic of Korea also introduced that the Republic of Korea will be the host of the 2019 International Renewable Energy Conference (IREC). The EGNRET meeting for the second half of 2019 could be held alongside with the IREC in Seoul, Republic of Korea, and it will be confirmed later.

At the end of the EGNRET meeting, the Chair and EGNRET delegates thanked Thailand for hosting the meeting and the Chair expressed his sincere appreciation to EGNRET members and invited speakers taking their time from their busy schedules to contribute to the meeting, and he closed the 51st meeting of the APEC EGNRET.

Special gratitudes are due to Thailand's representative, Ms. Munlika Sompranon and her team for their kind assistance and coordination on meeting affairs.

The EGNRET 51 meeting presentations are available on EGNRET website at:

<http://www.egnret.ewg.apec.org/meetings/egnret51/index.html>

ANNEX 1: LIST OF PARTICIPANTS

No.	Title	Name	Economy	Organization
1	Dr.	Rao Jianye	People's Republic of China	Electric Power Planning and Engineering Institute (EPPEI)
2	Mr.	YU Wai Lee, Willy	Hong Kong, China	Electrical and Mechanical Services Department, HKSAR
3	Mr.	LAW Kim Ming, Lawrence	Hong Kong, China	Electrical and Mechanical Services Department, HKSAR
4	Mr.	POON Kwok Ying, Raymond	Hong Kong, China	Electrical and Mechanical Services Department, HKSAR
5	Mr.	Takao Ikeda	Japan	The Institute of Energy Economics Japan
6	Ms	Marissa Cerezo	Philippines	Department of Energy
7	Mr.	S.K. Gavin YU	Republic of Korea	Korea Energy Agency
8	Dr	Tom, H. T. Lee	Chinese Taipei	Industrial Technology Research Institute
9	Dr.	Chung-Hsien Chen	Chinese Taipei	Bureau of Energy
10	Mrs	Munlika Sompranon	Thailand	Department of Alternative Energy Development and Efficiency, Ministry of Energy
11	Ms.	Sukanya Nanta	Thailand	Department of Alternative Energy Development and Efficiency

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No.	Title	Name	Economy	Organization
12	Mr.	Worapot Rugfoong	Thailand	Department of Alternative Energy Development and Efficiency
13	Mr.	Watcharin Pachittyen	Thailand	Department of Alternative Energy Development and Efficiency
14	Dr.	Prasert Sinsukprasert	Thailand	Ministry of Energy
15	Ms.	Yanisa Lertanantrakoon	Thailand	Ministry of Energy
16	Ms.	Thitiphorn Phongphanit	Thailand	Ministry of Energy
17	Dr.	Sorawit Nan-jaruwong	Thailand	Department of Alternative Energy Development and Efficiency
18	Dr.	Worajit Setthapun	Thailand	Chiang Mai Rajabhat University
19	Dr.	Nuwong CHOLLACOOP	Thailand	National Metal and Materials Technology Center (MTEC)
20	Dr.	Cary Bloyd	United States	Pacific Northwest National Laboratory
21	Dr.	Keng-Tung Wu	EGNRET Secretariat	Industrial Technology Research Institute
22	Dr.	Tarcy Sih-Ting Jhou	EGNRET Secretariat	Industrial Technology Research Institute
Invited Speaker				
1	Ms.	Chia-Yu Mao	APEC EWG	Taiwan Institute of Economic Research
2	Mr.	Alexey KABALINSKIY	APEREC	Asia Pacific Energy Research Centre (APEREC)
3	Mr.	Nicholas Wagner	IRENA	IRENA
4	Dr.	Fabian Kreuzer	UNESCAP	UN Economic and Social Commission for Asia and the Pacific

Annex 2: EGNRET Terms of Reference

Expert Group on New and Renewable Energy Technologies Asia Pacific Economic Co-Operation Energy Working Group

Terms of Reference (Draft)

Revised in November 2005 at EGNRET 23
Revised in January 2007 at EGNRET 28
Revised on March 30, 2017 at EGNRET 48
Revised on March 22, 2018 at EGNRET 50
Revised on September 12, 2018 at EGNRET 51

I. MISSION

1.1. The mission of the APEC Expert Group on New and Renewable Energy Technologies (EGNRET) is to facilitate an increase in the use of new and renewable energy technologies in the APEC region. The activities of the EGNRET will be directed towards meeting the energy challenges identified by APEC Leaders and Energy Ministers. In addition, the EGNRET will develop and implement projects that contribute to the EWG's objectives and strategic initiatives. The projects will be implemented primarily through the following Initiatives and Leaders' Declarations:

- APEC 21st Century Renewable Energy Development Initiative;
- Energy Smart Communities Initiative (ESCI);
- APEC Smart Grid Initiative (ASGI);
- Doubling the share of renewables in the APEC energy mix by 2030

II. OBJECTIVES

2.1 The purpose of aforementioned APEC Energy Minister endorsed initiatives is to advance the use of renewable energy to promote sustainable economic development and growth within the APEC region. The initiatives address the principal objectives of the APEC EWG by fostering a common understanding of regional renewable energy technology issues, facilitating trade and investment in new and renewable energy

technologies and services, and reducing the environmental impact of the energy sector through applications of new and renewable energy technologies.

2.2 In addressing these objectives, the Expert Group may be involved in the following types of activities, depending on the level of available funding and member-economies' priorities relating to renewable-energy development:

- developing effective policy recommendations for addressing impediments to the increased use of renewable energy technologies and for including renewable energy in domestic energy plans;
- implementing renewable energy resource assessments to facilitate a thorough understanding of the availability of adequate resources in APEC-member economies;
- promoting the commercialization of renewable energy technologies in such a way as to make them economically viable in a wide range of applications;
- establishing procedures and mechanisms for the routine exchange of pertinent information among member economies, focusing especially on officials responsible for decisions on energy supplies and operators and maintainers of renewable energy systems;
- identifying and mobilizing, as appropriate, industry, financial institutions, and government sources of financing, technical assistance and education programs by making these sources more aware of the benefits of renewable energy applications and the issues associated therewith;
- recommending and organizing activities to promote renewable-energy technology co-operation, so as to utilize existing technical expertise in APEC-member economies;
- promoting the development of the renewable-energy technological and services infrastructure to provide a basis for an effective, quality system of installation and maintenance;
- promoting the development of renewable energy technologies for specific applications that demonstrate the effectiveness of using these technologies to achieve specific economic or social goals of APEC-member economies;
- engaging in renewable-energy technology-assessment and related activities to demonstrate the cost-effectiveness of renewable-energy applications;

- developing the human resource base to improve the analytical, technical, operational and policy capacity within member economies in the area of renewable-energy development;
- facilitating improved reliability and stability in the provision of energy supply to meet demand;
- conducting research related to reduction of carbon intensity in the APEC region;
- promoting urban sustainable development in the APEC region through smart cities development and the exchange of best practices on deployment of new and renewable energy technologies combined with smart grid, energy efficiency, etc.;
- conducting research related to doubling the share of renewables by 2030 in APEC's energy mix;
- strengthening collaboration with other APEC fora such as APERC, EGEE&C, EGEDA, APSEC, LCMT Task Force, PPFs, Policy Partnership on Science, Technology, and Innovation (PPSTI), and disseminating results of related APEC projects, e.g., PRLCE, PREE, and LCMT;
- collaborating with International Energy Agency (IEA), International Renewable Energy Agency (IRENA), Economic Research Institute for ASEAN and East Asia (ERIA), Energy Research Institute Network (ERIN), Clean Energy Solutions Center from the Clean Energy Ministerial, and International Copper Association Ltd. (ICA) on promotion of renewable energy in the APEC region.

III. STRATEGIES

3.1 In carrying out the above tasks, the Expert Group is to be guided by the following strategies:

- to foster technology transfer for renewable energy based on local and regional industrial development;
- to engage industry, financial institutions, government officials, and NGOs, as appropriate;
- to improve the level of information exchange between member economies on existing initiatives to address market barriers;
- to assess the potential for replicating successful initiatives to breakdown market barriers;
- to identify and pioneer new initiatives to breakdown market barriers;

- to establish links with - and use of - existing technology-information databases and clearing houses;
- to encourage the development and use of energy planning tools that include renewable energy.

IV. ORGANIZATIONAL ASPECTS and OPERATION

4.1 The Terms of Reference of EGNRET will be reviewed every two years.

4.2 The chair and vice-chair of the expert group are elected by consensus at expert group meeting for a two-year term of office.

4.3 An EGNRET secretariat will be established to assist the chair in organizing EGNRET meetings and provides administrative support to the EGNRET. The secretaries will be nominated by the chair, and endorsed by EGNRET Representatives to hold the EGNRET secretariat.

4.4 In the event that the chair cannot attend a specific **EGNRET** meeting, then the vice-chair will serve as chair for that meeting, or alternatively the chair may designate the EGNRET secretariat or co-chair to chair the meeting on his/her behalf.

4.5 The hosting of all expert group meetings is on a voluntary basis and the host economy shall do its best to assist with the conduct of expert group meetings, including the provision of support/secretarial staff.

V. SUNSET CLAUSE

5.1 EGNRET has a term of four years starting from 2018. At the expiration of this and any subsequent term, EGNRET and its ToR shall be reviewed (by EGNRET and EWG) and a recommendation on renewal put to EWG for approval.