The 56th Meeting of APEC Expert Group on New and Renewable Energy Technologies (EGNRET 56)

Meeting Summary

Virtual Meeting hosted by the United States

6-7 April 2022

(The US Time, UTC -4)

1. Introduction

The 56th Meeting of the APEC Expert Group on New and Renewable Energy Technologies (EGNRET) was hosted by the United States in virtual style from 6 to 7 April 2022.

Delegates from ten (10) APEC member economies, namely Australia; Canada; Hong Kong, China; Japan; Republic of Korea; the Philippines; Singapore; Chinese Taipei; Thailand and the United States; and representatives from Six (6) APEC fora, including APEC Secretariat, Energy Working Group (EWG), Expert Group on Energy Efficiency and Conservation (EGEE&C), Expert Group on Energy Data and Analysis (EGEDA), Asia Pacific Energy Research Centre (APERC), and APEC Sustainable Energy Center (APSEC) attended the meeting. In total, sixty two (62) participants registered for this meeting.

The EGNRET 56 Meeting was chaired by Dr. Tom H.T. Lee, Chair of EGNRET, and co-chaired by Dr. Cary Bloyd, Senior Advisor, PNNL, the United States. The list of EGNRET 56 participants was attached in Annex A of the meeting summary.

2. Official Welcome and Opening Address

2.1 Official Welcome

On behalf of the host economy, Mr. Ron Cherry, Senior Policy Advisor,

Office of International Affairs, U.S. Department of Energy made the opening remarks. He welcomed all speakers and participants who attended the meeting and expressed his sincere thanks to the EGNRET secretariat for organizing the meeting. He stated that the meeting provided an opportunity for member economies to exchange views on renewable energy and he looked forward to the updates from APEC EWG, APEC fora and the presentations on the development of hydrogen energy technologies from invited speakers.

2.2 Opening Addresses and Adoption of Meeting Agenda

Dr. Tom H.T. Lee, Chair of EGNRET, appreciated the United States for the hospitality in hosting the EGNRET 56 meeting and welcomed the delegates from APEC member economies and APEC fora.

He highlighted that hydrogen energy technology played an important role to achieve the net zero emission target in many APEC economies. He appreciated the assistance from focal points of Australia, Japan, the Republic of Korea and the United States to recommend speakers to share the latest updates of hydrogen energy technologies. He expressed the hope that this arrangement could be beneficial to APEC members to exchange experience and opinions, and to evaluate the deployment of hydrogen technologies.

The EGNRET 56 meeting agenda was adopted by participating member economies.

3. Energy Development in the United States

Dr. Cary Bloyd, Senior Advisor, PNNL, the United States, presented the Energy Development in the United States. He introduced the highlights in the U.S. Annual Energy Outlook 2022 which the renewable energy consumption was expected to grow the fastest followed by growth in natural gas and declines in nuclear, and coal. He also introduced that the Bipartisan US$1.2 trillion

Infrastructure Law which is accelerating clean energy development and energy development programs.

4. Updates of APEC/ APEC Fora

4.1 Update on Projects by Mr. Takuo Miyazaki, Program Director, APEC Secretariat

APEC Secretariat announced the outcome of Project Session 2, 2021. In Project Session 2, 2021, 74 concept notes were submitted, with 62 of concept notes (84%) being approved in principle by the BMC. APEC Secretariat introduced the schedule and available project funds for Project Session 1, 2022 as well. He shared the results of Longer Term Evaluation of APEC Projects (LTEAP) and highlighted 3 key areas for improvement:

- More effective targeting of project participants - Identify participants with the 'right' skills profile, and role in the organization
- Greater application of project learning by participants at home Promote improvements to policies and practices in APEC economies
- Increased participation rates - Maximize capacity building outcomes

4.2 EWG Update by Ms. Ariadne BenAissa, EWG Lead Shepherd

EWG Lead Shepherd stated that global warming was urgent, according to the latest findings from IPCC, greenhouse gas emissions continued to rise and we were way off track to reduce emissions, so we needed more efforts. She stated that EGNRET played an important role in developing renewable energy in the APEC region and reaching the APEC's leaders' aspirational goals.

She introduced the next EWG meeting which would be held virtually by Chinese Taipei and the survey was sent out to EWG members and APEC fora to communicate the meeting format. In addition, she shared that Mr.

CHU Kei-ming Barry from Hong Kong China was selected as Deputy Lead Shepherd of the EWG.

4.3 EGNRET Update by Dr. Tarcy Sih-Ting Jhou, EGNRET Secretariat

EGNRET Secretariat reported the meeting summary of the 55th meeting of APEC EGNRET hosted virtually by Chinese Taipei on 12-14 May 2021. She also presented the collaborations with APEC Fora including EGEDA and EGEE&C, and reported the EGNRET project updates.

4.4 EGEDA Update by Mr. Edito Barcelona, EGEDA Secretariat

EGEDA secretariat reported EGEDA activity updates that included energy data collection, training courses and workshops on energy statistics, and last and upcoming EGEDA meetings. The tracking of the progress of the APEC energy intensity reduction goal and APEC renewable energy doubling goal were also presented.

4.5 APERC Update by Mr. Ario Jati, Senior Researcher, APERC

APERC presented the preliminary renewable energy results in the 8th Edition Energy Outlook. According to the APERC's preliminary model results, APEC would achieve the doubling renewable energy goal. The share of modern renewables in final energy consumption would be more than double by 2030. Renewable power generation is expected to rise to 41% in the carbon neutrality scenario by 2030, with solar and wind leading the growth.

4.6 APSEC Update by Dr. Jinlong Ma, Vice President, APSEC

APSEC reported the "Workshop on Energy Transition and Low Carbon Green Development" and APEC project results including: 1) Innovative Approaches for Scaling-Up Renewable Energy Deployment in APEC Region (EWG 04 2020S); 2) Support Offshore Wind Deployment and Grid Connection in APEC Region (EWG 06 2021A); 3) Impacts of COVID-19 on

Renewable Energy Development in APEC Economies (EWG 07 2021A).

5. EGNRET Project Updates

5.1 Progress/Status of Current EGNRET Projects & Project Submission Process by Dr. Tarcy Sih-Ting Jhou, EGNRET Secretariat

EGNRET Secretariat reported the submission deadline of concept note for Session 1, 2022, and introduced the project submission process and concept note development. The status of EGNRET projects as of March 2022 was also updated which had no concept note, 6 project proposals, 18 on-going projects and 1 completed project since the EGNRET 55 meeting. The list of EGNRET project updates (as of March 2022) was attached in Annex B of the meeting summary.

5.2 EGNRET Projects Report

8 projects were presented by three (3) member economies, namely Chinese Taipei, Thailand, and the United States as listed in the table below.

	Project Title	Project No.	Status (as of March 2022)	Proposing Economy
1	Filling the Gap to Reach the Goal of Doubling Renewable Energy in the APEC Region-Phase 2	EWG 02 2019A	On-going	Chinese Taipei
2	Accommodating Disruptive Technology into RE&EE Policies for Energy Security	EWG 11 2019A	On-going	Thailand
3	Integrating Electrical Vehicles and Solar Rooftop PV in Electricity Distribution Systems with Continued Performance of Distribution Transformers	EWG 03 2020A	On-going	
4	Exploring Co-Benefit Opportunities for Renewable Energy and Energy Efficiency Projects in the APEC Region	EWG 04 2019A	On-going	
5	APEC Workshop on University Collaboration to Support Data Gathering and Analysis in Energy	EWG 06 2019A	Completed	The United States

	Project Title	Project No.	Status (as of March 2022)	Proposing Economy
	Efficiency and Renewable Energy			
6	The Role of Integrated Distribution System Planning in Maximizing the Use of Distributed Energy Resources and Resiliency in the APEC Region	EWG 03 2020S	Completed	
7	Lessons learned on resiliency and uptake of variable energy resources from islanded grids that support APEC clean energy goals	EWG 04 2021A	On-going	
8	APEC Workshop Furthering University Collaboration to Support Data Gathering and Analysis in Energy Efficiency, Renewable Energy, and Energy Resiliency	EWG 12 2021A	On-going	

5.2.1 Filling the Gap to Reach the Goal of Doubling Renewable Energy in the APEC Region-Phase 2 (EWG 02 2019A / Chinese Taipei)

The final report on Filling the Gap to Reach the Goal of Doubling Renewable Energy in the APEC Region - Phase 2 (EWG 02 2019A) was endorsed on 30 March 2022. This project provides a practical roadmap towards achieving doubling the renewable energy goal and the priority for the policy recommendations including electricity, transportation and heating.

5.2.2 Accommodating Disruptive Technology into RE&EE Policies for Energy Security (EWG 11 2019A / Thailand)

The project aims to review the impact of disruptive technologies on the power generation and distribution, transport, and buildings sectors, and share best practices on RE&EE policies to accommodate the disruptive technologies. This project provides policy recommendations on accommodating disruptive tech on RE&EE policies. The final report is on

pending approval from APEC Secretariat.

5.2.3 Integrating Electrical Vehicles and Solar Rooftop PV in Electricity Distribution Systems with Continued Performance of Distribution Transformers (EWG 03 2020A / Thailand)

The project aims to provide recommendations to preserve the electricity distribution systems' performance and reliability when integrating solar rooftop PV and EVs. The key findings on PV and EV impacts were introduced at the meeting. The report included technical and policy recommendations .

5.2.4 Exploring Co-Benefit Opportunities for Renewable Energy and Energy Efficiency Projects in the APEC Region (EWG 04 2019A / Thailand)

Two workshops were held from 18 to 19 March 2021 and 19 to 20 July 2021, respectively, in virtual-hybrid format. Eighty-two (82) participants from thirteen (13) member economies attended the first workshop, and fifty-three (53) attendees from nine (9) member economies participated in the second workshop. The final report is under revision for endorsement.

5.2.5 APEC Workshop on University Collaboration to Support Data Gathering and Analysis in Energy Efficiency and Renewable Energy (EWG 06 2019A / USA)

The project aims to promote information sharing and capacity building across APEC universities with three key objectives as follows.

(1) Build the capacity of workshop participants by developing a network between the EWG, APERC, and University faculty in APEC economies.
(2) Share examples of collaborative projects by Universities in APEC economies that address the APEC energy efficiency and renewable energy goals.

(3) Develop project ideas, between the policymakers and University faculty in APEC economies, as project-based courses that will help inform energy efficiency and renewable energy goals.

The workshop was held on 8-9 June 2021 virtually with 36 participants from 18 APEC member economies. The project was completed.

5.2.6 The Role of Integrated Distribution System Planning in Maximizing the Use of Distributed Energy Resources and Resiliency in the APEC Region (EWG 03 2020S / USA)

The project concentrates on six themes, 1) transparent distribution system planning regulation and architecture, 2) planning for electric vehicles and their potential, 3) leveraging distributed energy resources for reliability and resilience, 4) increasing situational awareness, 5) allowing for microgrids, and 6) equitable recovering strategies. This project was completed and the final report was published on the APEC Website in March 2022.

5.2.7 Lessons learned on Resiliency and Uptake of Variable Energy Resources from Islanded Grids that Support APEC Clean Energy Goals (EWG 04 2021A / USA)

The objective of this project is to provide a summary of the costs and operational experiences of providing reliable electricity while utilizing maximum variable energy resources from islanded grids in the APEC region. The RFP for selecting a consultant was issued.

5.2.8 APEC Workshop Furthering University Collaboration to Support Data Gathering and Analysis in Energy Efficiency, Renewable Energy, and Energy Resiliency (EWG 12 2021A / USA)

The objective of this project is to build the capacity of workshop participants by developing a network among the EWG, APERC, APSEC

and University faculty in APEC economies. A 3-day in-person workshop is planned to be held in Bangkok, Thailand, tentatively in August 2022, with a site visit to King Mongkut's University of Technology Thonburi (KMUTT).

6. Invited Presentation- Hydrogen Energy Technology

6.1 Observations on Green Hydrogen in Australia-Projects, Technology and Feasibility by Mr. Andrew Williamson, Knowledge Sharing Manager, Australian Renewable Energy Agency (ARENA), Australia

Mr. Williamson introduced the ARENA's work in hydrogen, its projects, and how to accelerate the market of hydrogen. Reducing the cost of hydrogen produced from renewable energy, research and development to demonstrate technologies that address technical challenges along the rest of the hydrogen value chain, and proving the technical feasibility and commercial viability of hydrogen use cases were the strategic priorities of ARENA. ARENA had committed 190 million in Australian Dollars to 38 projects valued at 377 million in Australian Dollars to seed Australia's hydrogen industry. The current ARENA-funded feasibility studies, and current programs including advancing renewables programs, HyGATE initiative, and future fuels program were also presented.

6.2 Japan's Vision and Actions toward Hydrogen-based Economy by Deputy Director of Hydrogen & Fuel Cell Strategy Office, Energy Efficiency and Renewable Energy Department, Agency for Natural Resources and Energy, METI, Japan

Mr. Yoshida stated that the contribution of hydrogen was not only in decarbonization in the power sector, transportation sector, residential sector and industrial sector, but the hydrogen economy had the potential to make $2.5 trillion hydrogen related market and 30 million employments by 2050. Japan's strategies and policies toward hydrogen economy were introduced in which Japan had set the target to use hydrogen in power

generation, industry transportation and other fields widely, and hydrogen and ammonia would account for 1% in the power generation mix by 2030 in the Strategic Energy Plan.

Three (3) important challenges for developing hydrogen including technical issues, infrastructure development, and cost reduction were highlighted. The updates on Japan's hydrogen development were also introduced, including 1) the liquefied hydrogen carrier shipped has been finished the first long-distance voyage demonstration test from Australia to Japan successfully; 2) an international transport project of using methylcyclohexane as a hydrogen carrier had been demonstrated and feasibility studies were being conducted by Japan, Singapore and Malaysia.; 3) Japan was conducting large-scale water electrolyzer demonstration projects for improving the efficiency of hydrogen production electrolyzer equipment cost reduction, the establishment of an operational system to respond to supply and demand for hydrogen; 4) the regulatory reform, technological development and strategic development would be continued conducted in the transportation sector; 5) hydrogen boilers already have deployment case and some companies are considering deploying hydrogen boiler.

6.3 Korea's Hydrogen Policy and R&D by Dr. Tae-Hyun Yang, Head of the Hydrogen Energy Research Division, Korea Institute of Energy Research, the Republic of Korea

Dr. Yang introduced the hydrogen energy policy in the Republic of Korea including the Hydrogen Economy Roadmap announced in 2019 and the Hydrogen Economy Action Plan announced in 2021. Hydrogen supply could account for 27.9 Million Metric Tons by 2050. The current status of hydrogen energy development is mainly from grey hydrogen but clean hydrogen would be 100% by 2050.

The strategies of hydrogen development would make cost-competitive,

increase hydrogen storage density, deploy hydrogen refueling stations, promote hydrogen mobility and use in power conversion by a stationary fuel cell or hydrogen turbine. The hydrogen applications include power conversion from fuel cell power plant, CHP fuel cell for building and home, and transportation such as fuel cell vehicle and zero emission ship. The research and development plans for green hydrogen production were also presented.

6.4 U.S. Department of Energy Hydrogen Activities Open Remarks by Dr. Sunita Satyapal, Director, Hydrogen and Fuel Cell Technologies Office, US Department of Energy, The United States

Dr. Satyapal introduced the energy landscape and the key goals in the United States. She stated that hydrogen was one part of a broad portfolio of activities to decarbonize. The United States had published the Hydrogen Program Plan. The key opportunities for hydrogen are applying to industry and chemicals, transportation, and power and energy storage.

She also provided an overview of hydrogen and fuel cells in the United States and highlighted the hydrogen energy Earthshot that launched in 2021 with goalsto reduce the cost of clean hydrogen by 80% to $1 per 1 kilogram in 1 decade. She stressed that the strategies for promoting hydrogen energy were accelerating RD&D to reduce cost, ramping up replicable and sustainable demonstrations and deployments across the hydrogen value chain. The importance of international collaborations on hydrogen energy was also introduced.

6.5 Discussion on Hydrogen Energy Development

Participants had a fruitful discussion on the challenges and opportunities for developing hydrogen energy. The main challenges for developing hydrogen energy were summarized below.

(1) Restricted supply of key equipment in the market: There are very few

global suppliers of the large-scale electrolyzer. It is difficult to get firm quotations for green hydrogen projects.

(2) Lack of investor confidence: The hydrogen energy is an immature market, so it will be difficult to encourage companies to invest, especially in large volumes and long-term progress, which has a very high cost.

(3) Lack of infrastructure: It is expensive to build pipelines to transport hydrogen.

(4) Uncertainty of long-term technology developments and cost forecasting.

(5) Transportation cost: The cost of hydrogen liquefaction can be high and boil-off losses is also a problem for transportation.

(6) Requiring formulating suitable regulations for hydrogen use: The need for international standards and regulations on hydrogen represents a major obstacle to the development of a global hydrogen market.

The suggestions for developing hydrogen energy were also discussed as listed below:

(1) International collaboration is one of the keys to facilitating the development.

(2) Developing infrastructures such as terminals and pipelines is necessary.

(3) This technology is relatively immature. It requires extensive research in basic chemistry and materials.

(4) Scaling up the supply and demand of hydrogen and developing infrastructure can lead to cost reduction.

(5) Green premium: corporates and consumers can pay a green premium for the cost of natural gas. The industrial consumers could pay a green premium to decarbonize their consumption.

(6) Providing subsidies or implementing a carbon tax to make hydrogen energy more competitive to support hydrogen development.

(7) Call for formulating suitable regulations: It is suggested to revise the regulation to expand hydrogen application.

(8) For the early adoption of hydrogen energy, it is important to find

applications because the attribute of the hydrogen can create a valued strength to make them cost-effective. Finding such applications can help job start and solve the chicken-and-egg situation with all new existing technology to establish the supply infrastructure and demand.

EGNRET members made comments on this discussion that the target of carbon neutrality had been clear in many economies. The discussions on the topics of the energy transition were expected to be continued. It was important for APEC members to solve the barriers to hydrogen sources with the consideration of energy security.

7. Administration and Operation

7.1 Coming Events and Next Expert Group meeting

EGNRET Chair announced that Thailand would host the EGNRET 57 meeting in October or November 2022. Thailand gave a brief introduction of the coming meeting which is planned to be held in a hybrid format and jointly with EGEE&C. “BCG Model towards Carbon Neutrality” was proposed as the meeting theme.

7.2 EGNRET Terms of Reference (ToR)

EGNRET Chair reported that the Terms of Reference (ToR) for the EWG and its six subsidiary bodies, including EGNRET, were endorsed by SCE and renewed on 18 November 2021. The renewed EGNRET ToR is effective from 1 January 2022 to 31 December 2025.

7.3 Updates of EGNRET Secretariat

EGNRET Chair introduced the updated EGNRET Secretariat contact list and it was endorsed by members.

8. Closing Remarks

Mr. Ron Cherry, Senior Policy Advisor, Office of International Affairs, U.S. Department of Energy thanked the Chair and Secretariat to organize the meeting and all delegates for their participation.

He acknowledged the EGNRET efforts to promote renewable energy development in the APEC region and conducted collaborations on the APEC doubling renewable energy goals. He declared the EGNRET 56 meeting a success.

ANNEX A: LIST OF EGNRET 56 PARTICIPANTS

No.	Title	Name	Economy	Organization
1	Mr.	Andrew Williamson	Australia	Australian Renewable Energy Agency (ARENA)
2	Mr.	Michael Paunescu	Canada	Natural Resources Canada
3	Mr.	Jean-Philippe Bernier	Canada	Natural Resources Canada
4	Ms.	Elaine YIP	Hong Kong, China	Electrical and Mechanical Services Department
5	Ms.	Jovian CHEUNG	Hong Kong, China	Electrical and Mechanical Services Department
6	Mr.	Willy YU	Hong Kong, China	Electrical and Mechanical Services Department
7	Mr.	Chun-Yin LI	Hong Kong, China	Electrical and Mechanical Services Department
8	Mr.	Anson WONG	Hong Kong, China	Electrical and Mechanical Services Department
9	Mr.	Marco LAM	Hong Kong, China	Electrical and Mechanical Services Department
10	Mr.	Thomas CHEUNG	Hong Kong, China	Electrical and Mechanical Services Department
11	Mr.	Chi Man LO	Hong Kong, China	Electrical and Mechanical Services Department
12	Mr.	Wing-lun WATT	Hong Kong, China	Fire Services Department
13	Dr.	Hazel TSUI	Hong Kong, China	Environmental Protection Department, HKSAR
14	Ms.	Chuek-yee, KWOK	Hong Kong, China	Environmental Protection Department

No.	Title	Name	Economy	Organization
15	Ms.	Ho Hoi Nikita CHAN	Hong Kong, China	Environmental Protection Department, HKSARG
16	Dr.	Karen Lee	Hong Kong, China	Environmental Protection Department
17	Ms.	Man-ching LAM	Hong Kong, China	Environmental Protection Department
18	Mr.	Ray LEUNG	Hong Kong, China	Environmental Protection Department
19	Mr.	Eddie LEE	Hong Kong, China	Environmental Protection Department
20	Mr.	Hiroki Yoshida	Japan	Ministry of Economy, Trade and Industry, Japan
21	Mr.	Daisuke Hayaimzu	Japan	Ministry of Economy, Trade and Industry, Japan
22	Mr.	Takao IKEDA	Japan	The Institute of Energy Economics, Japan
23	Mr.	Dongho Shin	Republic of Korea	Korea Energy Agency
24	Dr.	Tae-Hyun Yang	Republic of Korea	Korea Institute of Energy Research
25	Mr.	Lucius Tan	Singapore	Energy Market Authority
26	Mr.	Ferdinand Binondo	the Philippines	Department of Energy
27	Ms.	Marissa Cerezo	the Philippines	Department of Energy
28	Ms.	Donnabel Ida F. Bastasa	the Philippines	Department of Energy
29	Ms.	Chermheen Mae V. Gonzales	the Philippines	Department of Energy

No.	Title	Name	Economy	Organization
30	Ms.	CHIA-CHING LEE	Chinese Taipei	Bureau of Energy, Ministry of Economic Affairs
31	Ms.	Chian-Yu Chen	Chinese Taipei	Bureau of Energy, Ministry of Economic Affairs
32	Ms.	Shih-Hua Hsu	Chinese Taipei	Bureau of Energy, Ministry of Economic Affairs
33	Dr.	SETTHAPUN, Worajit	Thailand	Chiang Mai Rajabhat University
34	Dr.	Kampanart Silva	Thailand	National Energy Technology Center (ENTEC)
35	Dr.	Nuwong Chollacoop	Thailand	National Energy Technology Center (ENTEC)
36	Mr.	Warote CHAINTARAWONG	Thailand	Department of Alternative Energy Development and Efficiency
37	Ms.	Munlika SOMPRANON	Thailand	Department of Alternative Energy Development and Efficiency
38	Ms.	Sutthasini GLAWGITIGUL	Thailand	Department of Alternative Energy Development and Efficiency
39	Mr.	Chanyut THONGCHINDA	Thailand	Department of Alternative Energy Development and Efficiency
40	Ms.	Jirawadee NIDSUNKID	Thailand	Department of Alternative Energy Development and Efficiency

No.	Title	Name	Economy	Organization
41	Mr.	Therdsak THONGKHUMTHAMMACHARD	Thailand	Department of Alternative Energy Development and Efficiency
42	Dr.	Yaowateera ACHAWANGKUL	Thailand	Department of Alternative Energy Development and Efficiency
43	Dr.	SETTHAPUN, Worajit	Thailand	Chiang Mai Rajabhat University
44	Dr.	Kampanart Silva	Thailand	National Energy Technology Center (ENTEC)
45	Dr.	Nuwong Chollacoop	Thailand	National Energy Technology Center (ENTEC)
46	Dr.	Cary Bloyd	the United States	Pacific Northwest National Laboratory
47	Mr.	Takuo Miyazaki	APEC Secretariat	APEC Secretariat
48	Ms.	Ariadne BenAissa	EWG Lead Shepherd	U.S. Department of Energy
49	Dr.	Tom H.T. Lee	EGNRET	EGNRET Chair
50	Dr.	Laurence Shin-Je Li	EGNRET	EGNRET Secretariat
51	Dr.	Tarcy Sih-Ting Jhou	EGNRET	EGNRET Secretariat
52	Ms.	Han-Yun Lee	EGNRET	EGNRET Secretariat
53	Ms.	Wen-Chi Yeh	EGNRET	EGNRET Secretariat
54	Mr.	Edito BARCELONA	EGEDA Secretariat	Asia Pacific Energy Research Centre

No.	Title	Name	Economy	Organization
55	Mr.	Ek-Chin VY	EGEEC	Electrical and Mechanical Services Department
56	Dr.	Manuel Heredia	APERC	Asia Pacific Energy Research Centre
57	Mr.	Ario Jati	APERC	Asia Pacific Energy Research Centre
58	Mr.	Alexander Izhbuldin	APERC	APERC
59	Mrs	Elvira Gelindon	APERC	APERC
60	Prof.	Li ZHU	APSEC	APEC Sustainable Energy Center (APSEC)
61	Prof.	Jinlong MA	APSEC	APEC Sustainable Energy Center (APSEC)
62	Dr.	Yong SUN	APSEC	APEC Sustainable Energy Center (APSEC)

ANNEX B: LIST OF EGNRET PROJECT UPDATES (As of March 2022)

A. Project Proposal for Session 2, 2021 (6)

No.	Project Title	Proposing Economy
1	Matured Impact Metrics Modelling for Mini-Grid Projects (MIMG) in APEC region	Korea
2	Empowering Indigenous Social Awareness on Renewable Energy and Increasing Inclusion Sustainability for Green Recovery in APEC Regions	Chinese Taipei
3	The Legislation Recommendation and Promotion of Multifunctional Ocean Space Usage: Feasibility Analysis of Integrating Floating PV Installations at Offshore Wind Farms in the APEC Region	Chinese Taipei
4	Best Practices on the Energy Storage System in E-scooters Developments and Applications in the APEC Region	Chinese Taipei
5	Achieving Carbon Neutrality through Bio-Circular-Green Economy Principle	Thailand
6	APEC Workshop Furthering University Collaboration with Policymakers, APSEC, and APERC on Data Gathering and Analysis in Energy Efficiency, Renewable Energy, and Energy Resiliency	USA

B. Ongoing Projects – 2018 & 2019 (7)

Project No.	Project Title	Proposing Economy
EWG 10 2018A	Low Emissions Development Strategies: Supporting the transition to energy efficient, electric transport systems	USA
EWG 02 2019A	Filling the Gap to Reach the Goal of Doubling Renewable Energy in the APEC Region-Phase 2	Chinese Taipei
EWG 03 2019A	APEC Multi-stakeholder Dialogue on Promoting Renewable and Clean Energy Policies	Viet Nam
EWG 04 2019A	Exploring Co-Benefit Opportunities for Renewable Energy and Energy Efficiency Projects in the APEC Region	Thailand
EWG 10 2019A	APEC Workshop on Strategies and Successful Case Studies on Solar Energy	Viet Nam
EWG 11 2019A	Accommodating Disruptive Technology into RE&EE Policy for Energy Security	Thailand
EWG 12 2019A	Evaluation of Energy Technologies, Programs and Policies	USA

B. Ongoing Projects – 2020 (7) & 2021 (4)

Project No.	Project Title	Proposing Economy
EWG 03 2020A	Integrating Electrical Vehicles and Solar Rooftop PV in Electricity Distribution Systems with Continued Performance of Distribution Transformers	Thailand
EWG 04 2020A	The APEC Workshop on Community Based Waste to Energy Management	Indonesia
EWG 08 2020A	APEC Workshop on Promoting Renewable Energy for Rural and Remote Area Development	Viet Nam
EWG 10 2020A	Utilizing Renewable Energy Certification to Facilitate APEC Regional Renewable Energy Growth	Chinese Taipei
EWG 13 2020A	Workshop on Korea's New and Renewable Energy Policies and Best Practices Applying Them into the APEC Region	Korea
EWG 14 2020A	The Promotion of Community Waste-to-energy System	Chinese Taipei
EWG 04 2020S	Innovative Approaches for Scaling-up Renewable Energy Deployment In APEC Region	China

Project No.	Project Title	Proposing Economy
EWG 04 2021A	Lessons learned on resiliency and uptake of variable energy resources from islanded grids that support APEC clean energy goals	USA
EWG 06 2021A	Support offshore wind deployment and grid connection in APEC region	China
EWG 07 2021A	Impacts of COVID-19 on renewable energy development in APEC Economies	China
EWG 03 2021S	APEC Clean Energy Purchasing and Decarbonization Workshop	USA

C. Completed since EGNRET 55 – 2019 (1)

Project No.	Project Title	Proposing Economy
EWG 06 2019A	APEC Workshop on University Collaboration to Support Data Gathering and Analysis in Energy Efficiency and Renewable Energy	USA