

The 61st APEC Expert Group on Energy Efficiency and Conservation (EGEEC 61)

Meeting Summary

17 to 18 October 2023

Makati, Philippines

1. Introduction

The 61st meeting of the APEC Expert Group on Energy Efficiency and Conservation (EGEEC 61) and the 59th Meeting of APEC Expert Group on New and Renewable Energy Technologies (EGNRET 59) was held at the Makati Diamond Residences, Philippines on 17 & 18 October 2023. Joint meetings of EGEEC and EGNRET were held on 17 October 2023 and in the afternoon of 18 October 2023.

The meeting was accompanied by three (3) APEC workshops on 16 October 2023, and a technical visit on 19 October 2023. The three (3) APEC workshops were:

1. The 7th Energy Efficiency Policy (EEP) Workshop organised by APERC;
2. Promotion of Multi-Function Ocean Space Usage for Renewable Energy Technologies organised by Chinese Taipei;
3. Microgrids for a Just Energy Transition organised by USA.

Delegates from eight (8)¹ APEC member economies (Hong Kong, China; Japan; Korea; Malaysia; The Philippines; Chinese Taipei; The United States; and Viet Nam), and representatives from six (6) APEC fora and sub-fora (APEC Secretariat; Asia Pacific Energy Research Center (APERC); APEC Sustainable Energy Center (APSEC); Expert Group on Energy Data and Analysis (EGEDA) and Expert Group on New and Renewable Energy Technologies (EGNRET), and Land Expert Group (LEG) under Transportation Working Group (TPTWG)) attended. Moreover, representatives from five (5) international organisations (International Energy Agency (IEA), the World Green Building Council (WorldGBC), Collaborative Labelling and Appliance Standards Program (CLASP), Energy Efficiency Hub (EE Hub), and ASEAN Centre for Energy (ACE)) participated in the meeting as speakers and observers.

The list of participants is attached in Appendix A of this meeting summary.

2. Joint Meeting of EGEEC and EGNRET (17 October 2023, 09:00 – 17:00)

The session was co-chaired by Mr Chi-Wen Liao, Chair of EGNRET, and Mr Patrick T.

¹ The quorum for EGEE&C meetings constitutes attendees from 10 economies.

Aquino, CESO III, Director IV, Energy Utilization Management Bureau, Department of Energy, the Philippines.

2.1 Official Welcome

On behalf of the Department of Energy, the Philippines, Mr. Patrick T. Aquino welcomed all APEC members, speakers, and participants who attended the meeting. He mentioned that the Philippines and APEC member economies have committed to fostering strong collaborations with the international community to realize energy sustainability and resiliency in the APEC region. Mr. Aquino highlighted the Philippines has its Energy Plan for 2020 to 2040 that targets a green energy scenario with a 35% to 50% share of renewable energy in the energy mix by 2030 to 2040; electric vehicles would comprise 10% of the total registered vehicles by 2040; and at least 12% reduction in the Greenhouse Gas (GHG) emissions would reduce at least 12% for the Nationally Determined Contribution (NDC). During the Joint Meeting of the 59th EGNRET and 61st EGEEC, he also mentioned that the Philippines proposed “Reinforcing Relevant Laws for a Comprehensive Approach to Energy Efficiency and Conservation, Renewable Energy, Electric Vehicle, and Sustainability in the APEC Region” to be the meeting theme and look forward to exchanging views with APEC members, speakers, and participants on the policies, regulations, and technologies of these areas. Finally, he wished the 2-day Joint Meeting of the 59th EGNRET and 61st EGEEC to have productive discussions and outcomes.

2.2 Opening Address and Adoption of Meeting Agenda

The EGNRET Chair expressed his sincere gratitude to the host economy, the Philippines, for the meeting arrangement. He also expressed his appreciation to EGEEC for co-organizing the 59th EGNRET and 61st EGEEC Joint Meeting. He wished the 2-day Joint Meeting to have fruitful discussions. The joint meeting agenda was adopted by participating member economies during the meeting.

2.3 Host Economy Presentation and Introduction of Meeting Theme

Mr. Patrick T. Aquino introduced the meeting theme “Reinforcing Relevant Laws for a Comprehensive Approach to Energy Efficiency and Conservation, Renewable Energy, Electric Vehicle, and Sustainability in the APEC Region” and shared the plans, programs, and accomplishments of the Department of Energy on energy efficiency and conservation, renewable energy, energy resiliency, and electric vehicle. He shared that the energy mix was dominated by fossil fuels (67%) and renewable share accounted for around 33% in 2022. Mr. Aquino shared that the Philippines facilitates private individuals and entities to use renewable energy through its National Renewable Energy Program (NREP). For energy efficiency and conservation (EE&C), he said that the Philippines

adopts the National Energy Efficiency and Conservation Plan (NEECP) and the EE&C Roadmap for 2023 to 2050, and short to long-term parallel policy programs across different sectors are being planned under the Plan and Roadmap. In addition, he stated that the Philippines' Energy Efficiency & Conservation Act also facilitates the improvement of energy consumption, provides incentives for energy efficiency projects, and establishes policies to promote related technologies.

2.4 Updates from APEC fora and sub-fora

Seven (7) presentations were conducted as follows:

2.4.1 “APEC Secretariat Update” by Mr Takayuki Niikura, Program Director of the APEC Secretariat

The APEC Secretariat presented updates for APEC projects. In 2023, the total number of Concept Notes submissions was 176, which increased by 48% compared to 2022 (a total number of 119). The total number of Concept Notes approved in principle by BMC in 2023 was 130, which grew by 18% compared to 2022.

He introduced a newly launched online system- the APEC Project Administration System (APAS). He explained that for upcoming projects, part of the application process would be carried out through APAS, while others would be conducted via email. He also updated the status of ongoing EWG projects, information on the ministerial meeting and publications, and upcoming workshops on EWG projects by the end of 2023.

2.4.2 “EGNRET Update” by Dr. Chi-Wen Liao, Chair of EGNRET

The EGNRET Chair updated EGNRET's recent activities, including the meeting outcomes of the 58th EGNRET Meeting, the highlights of the 65th EWG Meeting, and EGNRET's collaboration with APEC Fora this year. He also reported the current status of EGNRET projects.

2.4.3 “EGEEC Update” by Mr. Chun-Yin Li, Co-secretary of EGEEC Secretariat

The EGEEC Secretariat reported the meeting outcomes of the 60th EGEEC Meeting, which included the selection and endorsement of the new EGEEC Chair, Dr. Liu Meng from China, and Vice Chair, Ms. Jovian Cheung from Hong Kong, China, for the tenure from 1 July 2023 to 30 June 2025.

He updated that given the World Green Building Council (WorldGBC) has

received a 3-year gas status in EGEEC as WorldGBC shares the same goal as EGEEC on reducing building energy consumption, EGEEC members agreed to invite the WorldGBC as a guest member in a 3-year guest status in EGEEC during the 60th EGEEC Meeting.

2.4.4 “EGEDA Update” by Mr. Glen Sweetnam, EGEDA Chair

The EGEDA Chair reported that the collection of 2021 annual energy supply and demand data has been completed by the secretariat and that the annual energy supply and demand data for 2022 will be collected soon.

He shared that EGEDA is asking its economies to report on methane emissions from fossil fuels and nitrous oxide emissions to collect data. Given that many APEC economies have committed to reducing GHG emissions, EGEDA encouraged APEC economies to support data collection. In addition, he mentioned that EGEDA has also created an energy efficiency indicators template and invited EGEEC members to provide data through the template.

He introduced the progress of achieving APEC’s energy goals, including that APEC has reduced energy intensity by 27.5% from 2005 to 2021 and will need to reduce by 17.5% more in the next 14 years (2021 to 2035). Meanwhile, APEC increased its renewable energy share in final energy consumption by 3.93% from 2010 to 2021 and will need to increase by just 2.05% more in the next nine years (2022 to 2030). He highlighted that the data indicated that APEC is on track to meet its energy intensity and renewable energy goals.

He reported the EGEDA training courses, and stated that one of the courses was a two-week course to help participants from different economies improve skills in collecting and estimating energy-use energy consumption data. He shared the outcome of its 21st APEC workshop on energy statistics, the meeting outcomes of the 34th and 35th EGEDA meetings, and the EGEDA Secretariat's participation in international meetings.

2.4.5 “APERC Update” by Mr. Ting-Jui Sun, Senior Researcher of APERC

Mr. Sun reported APERC Update, which included updating and recapping the energy intensity and renewable energy share projections from APEC Energy Demand and Supply Outlook 8th Edition, updating recent policy related to energy efficiency and renewable energy, and its ongoing work for preparing the APEC Energy Demand and Supply Outlook 9th Edition.

He shared that energy efficiency and electrification enable energy demand to be

22% lower in 2050 in the Carbon Neutrality (CN) scenario compared to the Reference (REF) scenario. For electricity demand, fossil fuels meet almost 40 to 50% of electricity demand in 2050 in REF and renewable energy sources (such as wind and solar) will keep growing. Besides, he mentioned that fossil fuels will be replaced by new technology such as CCS, gas plus CCS, and coal plus CCS, etc. Natural gas will continue to provide balancing and ancillary services to the electric grid as a substitution for coal.

In addition, Mr. Sun pointed out that renewable energy policies in the APEC region have considered potential challenges, such as the intermittency of renewable energy, to mitigate the impacts on the power grid.

He mentioned that the projection period for Outlook 9th Edition will be until 2060 and considered the critical technology development trends, which include CCS, energy storage, hydrogen, etc. In the 9th Edition, the CN scenario pathway will be replaced with the target (TGT) scenario to illustrate a hypothetical pathway for each economy toward realizing energy-related policy targets, even if implementation details are unavailable.

After APERC's presentation, Dr. Chung-Hsien Chen, Director of Renewable and Prospective Energy Development Division, Energy Administration, Ministry of Economic Affairs, Chinese Taipei illustrated that geothermal energy has been amended in the Renewable Energy Development Act of Chinese Taipei. In the Act, bioenergy, offshore wind power, and small hydropower have more flexible mechanisms to promote renewable energy development. Chinese Taipei will share more information with APERC.

Ms. Jovian Cheung, the EGEEC Vice-chair asked if APERC could share more information regarding the contributions of energy policies (information disclosures, incentives, and regulations) among member economies to reduce the energy intensity in the APEC region.

Mr. Sun replied to the EGEEC Vice-chair that different energy sectors might impact energy intensity. APERC is endeavouring to support more energy regulations and incentives and ensure the implementation of those policies and programs.

2.4.6 “APSEC Update” by Prof. Jinlong Ma, Vice President, APSEC

Prof. Ma presented APSEC work progress updates, including APSEC participation and sharing in the EWG 65 Meeting and associated workshop, the 60th EGEEC Meeting, and the 7th APEC Workshop on Sustainable Cities. He

also shared the current progress and summary of EWG projects.

He shared the research program progress. Considering that cities are composed of two-thirds of global energy consumption and 50 to 60% of annual global carbon emissions, city or urban energy is critical for green and low-carbon development to help achieve carbon neutrality goals. The framework for APSEC's research for the next three years (2023 to 2025) will focus on driving cities through the low-carbon transition in 2023, storage to enable the energy transition with a focus on enabling technologies in 2024, and energy solutions for clean heating and cooling in 2025).

2.4.7 “Land Experts Group (LEG) Sharing” by Mr. Morgan Watkins, Chair of LEG

Mr. Watkins presented Towards Smart, Resilient and Low/Zero Emissions in the APEC Region. He introduced that LEG focuses on transportation work related to land transport. Its work is guided by its central policy theme towards smart, resilient, and low and zero emissions transport in the APEC region.

Mr. Watkins shared the results of the 11th APEC Transportation Ministerial Meeting, held in Detroit, Michigan, the United States in May 2023. Ministers had given the LEG a clear sense of direction and reaffirmed the crucial role of the Transportation Working Group (TPTWG), directed LEG to engage in specific and tangible areas of work, most relevantly, including catalyzing the transition towards low and zero emissions light duty vehicles, and ensuring the innovation and emerging technologies feature prominently in its discussions and work.

In addition, he mentioned that the transportation sector emits one-fifth of global carbon dioxide emissions. Therefore effective policy measures are needed to ensure low emissions and a sustainable future for land transportation. The key branches of this pathway include vehicle electrification, promoting public shared and active transport, and adopting sustainable energy sources for land transportation.

2.5 U.S. Presentation (Host of APEC 2023) by Dr. Cary Bloyd, Senior Advisor, Pacific Northwest National Laboratory, the United States

Dr. Bloyd shared the meeting outcomes of the 13th APEC Energy Ministerial Meeting (EMM), held in Seattle, Washington, the United States, on 15 to 16 August 2023. The meeting theme was “Creating a Resilient and Sustainable Future for All” focusing on power sector decarbonization, accelerating methane abatement, and supporting a just energy transition.

Dr. Cary Bloyd mentioned that according to the Chair's Statement of the 13th APEC EMM, some paragraphs were supported by nearly all APEC economies, which included a new collective aspirational goal for the power sector of about 70% electricity generated by carbon-free and carbon-neutral sources for the APEC region by 2035; and some APEC economies are committed to working to achieve their respective announced pledges that collectively comprise at least a 50% reduction methane emissions in the fossil energy sector from 2020 levels by 2030. In addition, EMM also tasked EWG with establishing a Just Energy Transition Initiative.

After the U.S.'s presentation, Mr. Takao Ikeda, Executive Economist, Renewable Energy Group, the Institute of Energy Economics, Japan, appreciated the U.S.'s leadership as chair economy for APEC EMM and its effort for the statement. He mentioned the significance of decarbonization for the electricity sector and working on the APEC region as a whole. He said the non-fossil fuels are expected to reach 59% of the electricity mix in 2030 in Japan based on Japan's current strategic energy plan. Besides, Japan has been continuing its effort to reduce methane emissions for a long time and participating in the Global Methane Pledge established in 2021. Japan would also like to contribute to reducing methane emissions in the LNG supply chain, including the APEC region.

2.6 Invited Presentations

Three (3) invited presentations were conducted as follows:

2.6.1 “International Energy Agency (IEA) Presentation” by Ms. Natalie Kauf, and Dr. Ksenia Petrichenko, Policy Analyst of IEA

Ms. Kauf, and Ms. Petrichenko from IEA presented Efficient Grid-interactive Buildings and Future Buildings in the ASEAN region. Most energy efficiency gains can be found in emerging and developing economies, like Southeast Asia. According to IEA's market report for 2022, the ASEAN region has a population of more than 660 million. It is one of the regions experiencing the fastest global energy demand growth by over 3% per year from 2000 to 2020. Therefore, enhancing energy efficiency is vital to align response to sustainable development goals, such as universal access to clean cooking solutions, access to modern energy services, etc.

They shared the IEA sustainability development scenario, which outlines a pathway that government policy can drive more sustainable cooling solutions through efficient air conditioners along with improving building efficiency, which can contribute to 110 TWh of electricity savings by 2040 compared to current policy settings. The energy savings and security of efficient buildings and cooling

equipment can be further enhanced through the adoption of smart and digital services to support demand management and a network of air conditioners.

2.6.2 “ASEAN Centre for Energy (ACE) Presentation” by Mr. Christopher Zamora, Senior Manager, ACE

Mr. Zamora introduced the program of ASEAN Plan of Action for Energy Cooperation (APAEC) Phase 2: 2021 to 2025 and its Energy Efficiency & Conservation and Renewable Energy Targets and Developments.

He shared that the theme and the sub-theme of APAEC Phase 2: 2021 to 2025 is “Enhancing Energy Connectivity and Market Integration in ASEAN to Achieve Energy Security, Accessibility, Affordability and Sustainability for All and Accelerating Energy Transition and Strengthening Resilience Through Greater Innovation and Cooperation”. The areas of the program include the power grid, gas pipeline, clean coal technology, energy efficiency, renewable energy, energy policy and planning, and civilian nuclear energy in the ASEAN region. The renewable energy target of APAEC is to increase the renewable energy share to 23% in the total primary energy supply (TPES) and 35% in installed power capacity by 2025.

In 2021, the share of APEC renewable energy in TPES and total installed power capacity reached 14.4% and 32.8% respectively. While the installed capacity share is projected to be achieved beyond 2025, the primary energy target is challenging. In the program, the strategies for renewable energy development include advancing policy and decarbonization pathways, conducting high-level policy dialogue, enhancing R&D, promoting renewable energy financing schemes and mechanisms, supporting biofuel and bioenergy development, and enhancing information and training center. However, long-term strategies and accelerated actions are also needed to balance energy security, emission reduction, and economic growth. A long-term renewable energy roadmap for ASEAN is under planning and preparation, which is expected to be completed in 2024.

After ACE’s presentation, Dr. Chung-Hsien Chen, Director of Renewable and Prospective Energy Development Division, Energy Administration, Ministry of Economic Affairs, Chinese Taipei suggested that APEC EWG, EGNRET, and/or EGCFE can cooperate with ASEAN on power grid, clean coal, new and renewable energy, and energy data.

Mr. Takao Ikeda, Executive Economist, Renewable Energy Group, the Institute of Energy Economics, Japan, mentioned the importance of ASEAN to APEC since 7 APEC economies are also members of ASEAN. Mr. Ikeda asked if there

are any discussions about renewable energy targets for the next phase, such as for 2030 or 2040.

Mr. Christopher Zamora, Senior Manager of the ASEAN Centre for Energy (ACE) replied to Mr. Ikeda that ACE recently had many meetings and consultations with ASEAN members on establishing a new target for renewable energy. ACE is also preparing for the next phase (2026 to 2035). The document is planned to seek endorsement by 2025. By then, it should have a clear target and strategies for renewable energy.

Ms. Jovian Cheung, the EGEE Vice-chair asked ACE if it has a target for carbon neutrality or any other initiatives apart from renewable energy and energy intensity. ACE replied that they are considering including a Carbon Neutrality Scenario in the upcoming 8th ASEAN Energy Outlook.

Dr. Zulfikar Yurnaidi, Manager of Energy Modelling and Policy Planning, at the ASEAN Centre for Energy (ACE) elaborated that ASEAN carbon neutrality strategies have been released with several key points including renewable energy. However, there has yet to be a carbon neutrality target for ASEAN since ministerial officials have not yet endorsed the exploration scenario for carbon neutrality.

2.6.3 “World Green Energy Council (WorldGBC) Presentation” by Mr. Christopher C. de la Cruz, Vice Chairman, WorldGBC Asia Pacific Network

Mr. Cruz shared the WorldGBC-APN Advancing Net Zero Readiness Framework, Asia-Pacific knowledge hub, the WorldGBC Asia-Pacific Network Meeting 2023 discussion outcomes, and Philippine Green Building Council (PHILGBC) rating and certification tools.

The WorldGBC-APN Advancing Net Zero Readiness Framework provides guidance for organizations to transition towards net-zero buildings by 2050 and focus on government leadership, technical approaches, finance, data, and mindset. Each category has a specific goal to accelerate net zero practices.

The WorldGBC Asia-Pacific Network Meeting 2023 discussion outcomes pointed out that reducing carbon emissions requires tailored strategies and solutions at each stage of the process, addressing the unique considerations and difficulties at each stage. Also, setting ambitious targets for carbon reduction can feel overwhelming due to the scale of the challenge, the targets can be achieved by breaking them down into manageable steps for tangible progress.

2.7 Member Economy Presentation

The theme of the joint meeting was "Reinforcing Relevant Laws for a Comprehensive Approach to Energy Efficiency and Conservation, Renewable Energy, Electric Vehicle, and Sustainability in the APEC Region". Six (6) member economies presented and were summarized below:

2.7.1 Hong Kong, China

Hong Kong, China presented its targets for energy intensity, renewable energy, and electricity saving in buildings to achieve carbon neutrality by 2050. The economy has various measures to promote RE applications, such as the Feed-in Tariff scheme. It boosts energy efficiency through different measures including policy, ordinance, as well as relevant programs.

2.7.2 Japan

Japan presented its 2050 carbon-neutral declaration, which aims to reduce its GHG emissions by 46% in 2030 from the level of 2013 and continue efforts to meet the goal of cutting its emissions by 50% in 2030. Japan has also been implementing the Feed-in-Premium since April 2022 as one of its key RE promotion schemes to facilitate renewable energy development. The economy also shared its Green Transformation (GX) Basic Policy, which focuses on regulatory, financing, and technology development for the green transformation of various industrial sectors.

2.7.3 Korea

Korea elaborated that the energy intensity has improved slowly over the years (from 2015 to 2021) due to the large share of energy-intensive industries and rapid electrification. Efficiency of electricity consumption is one of the keys to reducing GHG emissions. The Republic of Korea has applied various policy measures, which include incentives, regulations, information provisions, etc., to industry, infrastructure, transport, building, and appliance sectors. It has also mentioned its Energy Efficiency target for 2030 NDC and 2050 net zero emissions.

2.7.4 Malaysia

Malaysia updates its energy efficiency legislation and initiatives. The economy introduced its energy transition roadmap that focuses on optimizing EE, increasing usage of renewables, and abating industrial emissions with carbon

capture, utilization and storage (CCUS) to drive the energy transition and socio-economic advancement. Malaysia also introduced the Energy Efficiency and Conservation Act with objectives to reduce emissions, promote efficient and sustainable energy consumption, improve energy efficiency initiatives, and reach net zero by 2050. The bill is undergoing a few processes before it is approved to gazette.

2.7.5 Chinese Taipei

Chinese Taipei shared its key regulation, the Renewable Energy Development Act, with Feed-in Tariff (FIT) rates as its core strategy to promote renewable energy development. The economy also published its 12 key strategies in 2022 to achieve net zero emissions by 2050. It has targeted increasing the share of renewable energy in the electricity generation structure to up to 60 to 70% by 2050. Chinese Taipei also improves energy efficiency in key sectors under the pathway toward net zero transition and implements policies to promote energy efficiency management for equipment and apparatuses. Moreover, it provides subsidies for green appliances and introduces the Digital and Automated Review System to shorten examination procedures of online applications.

2.7.6 United States

The United States shared the electric vehicle (EV) systems and safety challenges while connecting to the grid, charging stations, and internet networks. In addition, the economy highlighted the safety of EV systems and EV supply equipment supply chain through performance testing, certification services, and other key measures. It is vital to manage the deployment of these technologies in the market on a system level while ensuring consumers' safety through approaches, such as compliance with standards.

3 EGEEC 61 Meeting (18 October 2023, 09:00 – 11:05)

The EGEEC 61 meeting were co-chaired by Ms Jovian Cheung, the EGEEC Vice Chair, and Mr Patrick T. Aquino, CESO III, Director IV, Energy Utilization Management Bureau, Department of Energy, the Philippines.

3.1 Invited Presentations

Two (2) invited presentations were conducted as follows:

3.1.1 “Unlocking Access to Greater Cooling Efficiency and Next-Generation Refrigerants in Southeast Asia” by Dr Lei Zeng, Steven, China Program Lead, Collaborative Labeling and Appliance Standards Program (CLASP)

CLASP presented an overview of the global market for Room Air Conditioners (RACs), market share for different brands and trade flows within Southeast Asia. The RAC market reached 8.3 million units in 2021, with Singapore and Malaysia having the highest penetration rates. The market and penetration rates are projected to continue growing.

CLASP also shared the situation and compared energy efficiency standards across RACs in various APEC member economies. Most RACs produced and sold in the region are of low efficiency, mainly due to local subsidiaries to multinational companies. Despite variable speed RACs having higher efficiency, the market adoption was low.

CLASP shared China's experience in setting inverters with a Coefficient of System Performance (CSPF) below 6.1 Wh/Wh for systems with a capacity of ≤ 4.5 kW, classified as "low efficiency". The MEPS was chosen due to its alignment with ASEAN 2025 target MEPS and U4E industry model guidelines, as well as China's export presence.

Southeast Asian policymakers were encouraged to adopt the ASEAN 2025 MEPS levels, prohibit using high-GWP refrigerants, and implement import policies and incentives for energy-efficient RACs. In addition, exporting economies were recommended to ensure that their exports meet domestic requirements.

Following CLASP's presentation, the Philippines inquired about the availability of an impact analysis regarding the cost implications of implementing higher MEPS. In response, CLASP stated that they would consult their colleagues to determine if such data is accessible or would be a worthwhile research subject.

APERC suggested that the second-hand RAC market could be a research idea.

3.1.2 “Energy Efficiency Hub (EE Hub) Updates” by Dr Jonathan Sinton, Head of Secretariat, EE Hub

Dr. Jonathan Sinton introduced Ms. Penny Sirault as the new chair of the hub. He also shared the recent work of the task groups. The Energy Management Action Network (EMAK) held its 12th workshop in December with the theme “Evolution of Energy Efficiency Policies into Demand-side Energy Policies”.

Details are available on the EE Hub website (<https://energyefficiencyhub.org/resources/emak-12-evolution-of-energy-efficiency-policies-into-demand-side-energy-policies/>). The Energy Efficiency in Buildings task group (EEB) planned to explore deep energy retrofits of buildings. Super-Efficient Equipment and Appliances Deployment (SEAD) has compiled data that pairs energy performance with product prices in different markets.

The EE Hub recently held a workshop on data centres, emphasising the need for efficient data centres and the opportunities for using demand response, waste heat and innovative technologies as the energy demand rises. The EE Hub also hosted the session “Exchanging lessons from the energy crisis in accelerating efficiency” at the IEA 8th global conference on energy efficiency. A recording is available on the EE Hub website (<https://energyefficiencyhub.org/resources/hubs-special-event-at-iea-8th-global-conference-on-energy-efficiency/>).

3.2 Project Updates / Concept Notes Presentations

The status of twelve (12) nos. of the APEC projects were reported during the meeting and summarised below:

	APEC Project Title	Proposing Economy	Project Number
1	Capacity Building Workshop on APEC’s Goals of Doubling the Renewable Energy Share in the Energy Mix and Reducing Energy Intensity	HKC	EWG 08 2021S
2	Promoting Energy Modelling in APEC Region	HKC	EWG 05 2022A
3	APEC Retro-Commissioning (RCx) Hub: Training and Registration Scheme	HKC	EWG 07 2022A
4	APEC Workshop On Sharing Experiences In Developing Minimum Energy Performance Standards (MEPS) To Reduce Electricity Consumption In Industrial Production	Viet Nam	EWG 01 2022A
5	APEC Workshop on Sustainable Energy Transition: Opportunities and Challenges	Viet Nam	EWG 08 2022A
6	APEC Workshop on Promoting Technology to Contribute To Sustainable Energy Transition	Viet Nam	EWG 01 2023A
7	APEC Workshop on Promoting Sustainable Energy for Small Farmers towards Climate Friendly AGRI-Food Value Chains	Viet Nam	EWG 02 2023A

8	Sustainable Mobility: Routes for integrating the Energy and Transport Sectors for Urban Cities	United States	EWG 05 2019A
9	Sustainable Mobility: Routes for integrating Energy and Transport Sectors for Sustainable Urban Mobility	United States	EWG 02 2022A
10	Promoting Net Zero or Carbon Neutral Commitments in APEC	United States	EWG 07 2021S
11	Lessons learned on resiliency and uptake of variable energy resources from islanded grids that support APEC clean energy goals	United States	EWG 04 2021A
12	APEC Workshop Furthering University Collaboration to Support Data Gathering and Analysis in Energy Efficiency, Renewable Energy, and Energy Resiliency	United States	EWG 12 2021A

3.2.1 Capacity Building Workshop on APEC’s Goals of Doubling the Renewable Energy Share in the Energy Mix and Reducing Energy Intensity (EWG 08 2021S) by Hong Kong, China

HKC reported that an online two-day workshop was held on 29 and 30 November 2022. The project aimed to build capacity on APEC's goals of doubling the renewable energy share in the energy mix and reducing energy intensity. The workshop covered various topics related to global climate action, energy efficiency, renewables, and emerging low-carbon technologies.

3.2.2 Promoting Energy Modelling in APEC Region (EWG 05 2022A) by Hong Kong, China

HKC reported that an online workshop was held on 8 August 2023. The Workshop Summary has been finalized. The workshop emphasized the importance of an iterative process involving data gathering, stakeholder involvement, and model enhancements as best practices. Energy models have been recognized for their ability to forecast consumption, track low-carbon transitions, and shape energy policies. Various scenarios were presented to demonstrate the benefits of energy modelling for APEC countries, including emissions, renewable energy capacity, and technological advancements.

3.2.3 APEC Retro-Commissioning (RCx) Hub: Training and Registration Scheme (EWG 07 2022A) by Hong Kong, China

HKC reported that the APEC RCx Hub website has been created to share information on RCx initiatives, regulations, guidelines, and training courses. It also includes a framework for implementing RCx. Online RCx training courses

are being developed, with nominations for the course to be invited soon.

3.2.4 Sustainable Mobility: Routes for integrating the Energy and Transport Sectors for Urban Cities (EWG 05 2019A) by United States

The US reported that the project was completed in late 2022 and the final report was published and available at: <https://www.apec.org/publications/2022/10/planning-a-transition-to-electrification-of-public-transit-systems-learnings-from-the-bus-rapid-transit-system-of-metrobus-in-mexico-city>.

3.2.5 Sustainable Mobility: Routes for integrating Energy and Transport Sectors for Sustainable Urban Mobility (EWG 02 2022A) by United States

The US reported that three (3) workshop reports were under preparation.

3.2.6 Promoting Net Zero or Carbon Neutral Commitments in APEC (EWG 07 2021S) by United States

The US expressed that most of APEC economies have proposals for net zero in the mid-centuries. This project is a multiyear workstream for information sharing and capacity building to support APEC economies seeking to make net-zero or carbon-neutral commitments. A compendium of best practices was shared in Hawaii in April 2023.

3.2.7 Lessons learned on resiliency and uptake of variable energy resources from islanded grids that support APEC clean energy goals (EWG 04 2021A) by United States

The US reported that the project was completed. The project report was published and available at: <https://www.apec.org/publications/2023/05/lessons-learned-on-resiliency-and-uptake-of-variable-energy-resources-from-islanded-grids-that-support-apec-clean-energy-goals>

3.2.8 APEC Workshop Furthering University Collaboration to Support Data Gathering and Analysis in Energy Efficiency, Renewable Energy, and Energy Resiliency (EWG 12 2021A) by United States

The US reported that the project was completed. The project report was published in early 2023 and available at: <https://www.apec.org/publications/2023/09/final-report---building-back-better-energy-efficiency-renewable-energy-and-energy->

[resiliency-in-the-new-normal.](#)

3.2.9 APEC Workshop On Sharing Experiences In Developing Minimum Energy Performance Standards (MEPS) To Reduce Electricity Consumption In Industrial Production (EWG 01 2022A) by Viet Nam

Viet Nam expressed gratitude for the co-sponsors' support for this project. A hybrid mode workshop was held on 29 and 30 June 2023 to share information and experiences in developing maps to improve energy efficiency in industrial production among APEC economies. The workshop covered key issues such as minimum energy performance standards, costs and benefits of energy efficiency, mandatory energy labelling schemes, case studies from APE member economies and recommendations for future actions. Key recommendations for APEC member economies were (1) Increase private sector and consumer involvement in discussions and decisions on developing and implementing standards and tools for MEPS; (2) Improve transparency by making information about ongoing MEPS projects easily accessible to the public, and (3) Offer technical assistance in creating frameworks for MEPS in both industrial production and home consumption.

3.2.10 APEC Workshop on Sustainable Energy Transition: Opportunities and Challenges (EWG 08 2022A) by Viet Nam

Viet Nam reported a workshop was held on 23 and 24 November 2023. The Workshop aimed to provide an opportunity for stakeholders from APEC and non-APEC member economies to share opportunities and challenges in the energy transition towards a low-carbon economy. Members were encouraged to participate.

3.2.11 APEC Workshop on Promoting Technology to Contribute To Sustainable Energy Transition (EWG 01 2023A) by Viet Nam

Viet Nam reported that the project proposal is under the Quality Assessment process and will share the latest update when available.

3.2.12 APEC Workshop on Promoting Sustainable Energy for Small Farmers towards Climate Friendly AGRI-Food Value Chains (EWG 02 2023A) by Viet Nam

Viet Nam reported that the project aims to build capacity for member economies, especially developing ones, to figure out practical approaches in implementation

and possible cooperation areas to enhance the adoption of sustainable energy for agri-food value chains through sharing information, experiences, best practices and case studies. A workshop will be held in April 2024, and members' participation in this project is welcome.

The status of five (5) nos. of the APEC Concept Notes were reported during the meeting and summarised below:

APEC Concept Note Title		Proposing Economy	CN Number
1	Promoting Energy Efficiency Enhancement in Electricity Generation	HKC	CN EWG 208 2023
2	APEC Peer Review on Energy Efficiency (PREE) Phase 13	APEREC / Japan	CN EWG 209 2023
3	APEC Workshop on Promoting Digital Transformation for Energy Efficiency	Viet Nam	CN EWG 202 2023
4	Driving Trade & Investment for DC Power Systems and Microgrid Frameworks Through Public Policy Alignment	United States	EWG 208 2023A
5	USA 2023 Self-funded Project: Microgrids for a Just Energy Transition	United States	EWG 04 2023S

3.2.13 Promoting Energy Efficiency Enhancement in Electricity Generation (CN EWG 208 2023) by Hong Kong, China

HKC reported that the concept note had been approved in principle and the project proposal was under review. This project aims to promote energy efficiency enhancement in electricity generation and strengthen energy efficiency action through implementing effective policy, driving energy efficiency investment, and boosting innovative and technological improvements. A workshop was planned to be held in the first half of 2025.

3.2.14 Driving Trade & Investment for DC Power Systems and Microgrid Frameworks Through Public Policy Alignment (EWG 208 2023A) by United States

The US reported that the concept note had been approved in principle, and the project proposal was under review. This project aims to build the capacity of APEC members and promote energy security and low-carbon energy systems by fostering harmonization of regulatory and conformity assessment approaches for DC power and microgrid systems. A workshop was planned to be held alongside

the EWG meeting in Peru.

3.2.15 Microgrids for a Just Energy Transition (EWG 04 2023S) by United States

A workshop was held alongside the Joint meeting on 16 October 2023 aimed to build capacity in leveraging microgrids and related technologies towards a just energy transition.

3.2.16 APEC Peer Review on Energy Efficiency (PREE) Phase 13 (CN_EWG_209_2023) by APERC

The next PREE is planned in Chile in the first half of 2024, where experts make recommendations to improve energy efficiency in Chile. This would be a follow-up PREE after 2009. An Energy Efficiency Policy (EEP) Workshop would be held alongside EGEC63 in the second half 2024.

3.2.17 APEC Workshop on Promoting Digital Transformation for Energy Efficiency (CN EWG 202 2023) by Viet Nam

The project aims to provide capacity building to APEC member economies' governments, especially developing ones, through sharing information and experiences in addressing challenges and implementing digital transformation in the energy sector in the interest of energy efficiency. The project proposal is under the Quality Assessment process.

3.3 EGEEC Governance Issues

3.3.1 EGEEC Contact List

EGEEC Secretariat reported that the EGEEC Contact List was updated and circulated to members on 10 October 2023. Members were encouraged to nominate experts from APEC economic members to join the EGEEC and regularly review and update the EGEEC contact list to build capacity and share knowledge in energy efficiency and conservation-related policy.

3.3.2 EGEEC Website

The EGEEC Secretariat reported that the meeting documents for EGEEC 60 had been uploaded to the EGEEC Website. He also encouraged members to send the presentation materials for EGEEC 61 to the EGEEC Secretariat for uploading on the EGEEC website.

3.3.3 Review of EGEEC Terms of Reference

The EGEEC ToR was endorsed on 26 November 2021. The EGEEC ToR has a four-year term starting 1 January 2022 to 31 December 2025. EGEEC Secretariat encouraged members to review and share if they have any suggestions for amendments.

3.3.4 Upcoming EGEEC / EWG Meetings

The EGEEC Secretariat reported that China would tentatively host the 62nd EGEEC meeting in May 2024. The EGEEC Secretariat encouraged member economies to host the upcoming EGEEC meetings in the second half of 2024.

The 66th EWG meeting will be held in Bangkok from 27 November 2023 to 1 December 2023.

3.3.5 EGEEC Logo

The EGEEC Secretariat reported that EGEEC (since 1993) has been established for 30 years. It has been suggested EGEEC to create a logo to improve visibility and communication and leave a lasting legacy. Members are encouraged to submit logo designs and descriptions of the design concept to the secretariat for consolidation. The selection will be conducted in the next meeting.

3.3.6 Quorum Issue

Mr. Munehisa Yamashiro from APERC brought up the matter of the EGEEC quorum, noting that only eight economies were present. He emphasised the need to carefully consider how we can ensure that future EGEEC meetings meet the quorum requirement.

4 Joint Meeting of EGEEC and EGNRET (18 October 2023 13:00 – 14:40)

The session was co-chaired by Ms Jovian Cheung, the EGEEC Vice-chair, and Mr Patrick T. Aquino, CESO III, Director IV, Energy Utilization Management Bureau, Department of Energy, the Philippines.

4.1 Progress on Possible New Energy Goals for APEC by Mr. Glen Sweetnam, EGEDA Chair/Senior Vice-President, APERC

Mr. Sweetnam mentioned that three new energy goals for APEC were proposed in the 13th EMM, which included approximately 70% of electricity generated by

carbon-free and carbon-neutral sources for the APEC region by 2035; at least 50% methane emissions reduction in the fossil energy sector from 2020 levels by 2030; and tasking EWG to establish a Just Energy Transition Initiative to promote efforts to accelerated energy transitions within APEC economies.

According to the APERC's research, the decarbonized share of power generation rose from 31% to 35% from 2000 to 2020. From 2020 to 2035, the decarbonized share was projected to increase by 17% in the REF scenario and 27% in the CN scenario. According to the trend of the scenarios, the decarbonization of the United States can substantially affect APEC.

4.2 Discussion: APEC Fora Collaboration

- The attending economies, expert groups, research centres, and international/regional organizations, as listed below, discussed the collaborative opportunities and actions. Japan suggested that EGNRET collaborate with EGCFE on hydrogen, such as utilization and transportation..
- The Philippines mentioned that most requirements of land electrification of LEG are consistent with the Philippines' push to meet energy consumption for transportation more efficiently. It would be great for EGNRET and other expert groups to collaborate with LEG on key topics, such as infrastructure and RE technologies.
- Chinese Taipei proposed the possibility of expert groups collaborating with the APEC Policy Partnership on Science, Technology, and Innovation (PPSTI) considering that PPSTI has a research centre to focus on advanced hydrogen technology, an important energy source.
- The United States suggested collaboration among more APEC expert groups and fora to organize a big meeting to have more members share information, find common issues, and address core issues on EE and RE to gain more fruitful outcomes.
- EGNRET mentioned that EGNRET was invited by the Asia-Pacific Metrology Programme (APMP) to share the APEC renewable energy goal, energy development, and EGNRET works on APMP's workshop Measurement for Sustainable Energy in August 2023. EGNRET Chair suggested that EGNRET explore further collaboration with APMP.
- EGEEC suggested that EGNRET and EGEEC send an email to members and EWG

to recommend APEC members to host the joint meetings to share knowledge and explore fora collaborations. Also, the APEC fora can collaborate further with international and regional organizations.

- APSEC suggested that APEC fora can collaborate with international organizations, such as the United Nations (UN), to co-organize forums to develop specific topics and also open the door for the public to enhance capacity building and knowledge-sharing to focus on broader areas and help achieve the APEC goals.
- Land Expert Group (LEG) sought cooperation with EGEEC and EGNRET. LEG proposed the potential areas for the collaboration could be:
 - Interface between surface transportation, land use, energy use, and nature to drive efficiencies and transit, freight or other areas that can grow the health of cities.
 - Climate resilience and adaptation, particularly future net transport infrastructure challenges in the APEC region.
 - Topics that fall within the scope of the main policy theme.
 - Policy Brief 55 aims to power up vehicle electrification, promote public, share and active transport, and adopt sustainable energy sources for land transport; or transport minister directions.
- ASEAN expressed its interest in cooperating with APEC expert groups and proposed possible activities for the collaboration, including ASEAN and APEC expert groups pursuing information sharing and simulation of best practices for RE, EE&C, or other key topics; conducting joint research to include regional energy policy and planning, ASEAN power grids for RE, and exploration of EE in the power sector; or jointly conducting capacity building and training. It is also for APEC public and business sectors to coordinate and network.
- CLASP proposed the collaboration between CLASP and expert groups on joint research to improve EE on energy-consuming products and sharing views with economies on EE&C, standards, labelling, policy, etc. to learn from each other.

4.3 EGEEC Report

The EGEEC Secretariat reported the outcomes of the 61st EGEEC Meeting and the Joint Meeting of the 59th EGNRET and 61st EGEEC, including key discussions and

conclusions. The EGEEC Secretariat also announced that the 62nd EGEEC Meeting will be hosted by China in May 2024, tentatively.

4.4 EGNRET Report

The EGNRET Secretariat reported the outcomes of the 59th EGNRET Meeting and the Joint Meeting of the 59th EGNRET and 61st EGEEC, including key highlights, discussions, and conclusions. Four member economies, namely China, Hong Kong China, Chinese Taipei, and the United States, shared the status/progress of their EGNRET projects.

4.5 Closing Remarks

Mr. Patrick T. Aquino, CESO III, Director IV, Energy Utilization Management Bureau, Department of Energy, the Philippines, gave closing remarks to express deep appreciation to the speakers and delegates for their participation and valuable insights and knowledge sharing. Mr. Aquino also mentioned the members have committed to advancing energy efficiency and renewable energy in the APEC region. The fruitful discussions strengthened the collective efforts to address the energy challenges and explored multiple solutions to the policy framework and strategies to promote EE&C, RE, and sustainability.

Ms. Jovian Cheung, the EGEEC Vice-chair, expressed gratitude to the Philippines for hosting the meetings and workshops and to all participants for their participation and contributions. Ms. Cheung said that the meetings have put forward and demonstrated the commitment of all member economies to achieving APEC's energy efficiency and renewable energy goals. In addition, all presentation materials will be uploaded to EGNRET and EGEEC websites for sharing with participants, and the meeting summary will also be circulated among members of EGNRET and EGEEC after the meeting.

Appendix A – List of Participants

No	Title	First Name	Last Name	Economy / APEC Sub-fora	Organisation
1	Mr.	Takayuki	Niikura	APEC Secretariat	APEC Secretariat
2	Ms.	Jovian	Cheung	EGEEEC	EMSD
3	Mr.	Chun Yin	Li	EGEEEC	EMSD
4	Mr.	Chi-Wen	Liao	EGNRET	EGNRET
5	Ms.	Sih-Ting	Jhou	EGNRET	EGNRET
6	Ms.	An-Chi	Fan	EGNRET	EGNRET
7	Mr.	Marco	Lui	Hong Kong, China	EMSD
8	Mr.	Takao	Ikeda	Japan	The Institute of Energy Economics, Japan
9	Ms.	Masami	Iwai	Japan	The Institute of Energy Economics, Japan
10	Dr.	Jongwoo	Kim	Korea	Korea Energy Economics Institute
11	Dr.	Younsung	Kim	Korea	George Mason University
12	Mr.	Amirul Hazman	Hamzah	Malaysia	Energy Commission Malaysia
13	Ms.	Syafiqah	Binti Hazmi	Malaysia	Energy Commission Malaysia
14	Dir.	Patrick T.	Aquino	Philippines	Department of Energy
15	Dir.	Lana Rose A.	Manaligod	Philippines	Department of Energy
16	Mr.	Daniel Collin G.	Jornales	Philippines	Department of Energy
17	Mr.	Christian Harris T.	Hernaез	Philippines	Department of Energy
18	Ms.	Mara Camille C.	Galos	Philippines	Department of Energy
19	Ms.	Sienna Mae S.	Hortaleza	Philippines	Department of Energy
20	Mr.	Vittorio Leif Ericson J.	Santos	Philippines	Department of Energy
21	Ms.	Mary Mae C.	Hernandez	Philippines	Department of Energy
22	Ms.	Mary Grace Q.	Razonable	Philippines	Department of Energy
23	Mr.	Cephas Olivier V.	Cabatit	Philippines	Department of Energy
24	Ms.	Jovelle E.	Medina	Philippines	Department of Energy
25	Mr.	Erwin E.	Esperanza	Philippines	Department of Energy
26	Mr.	Mark Jezekiah O.	Abalos	Philippines	Department of Energy
27	Mr.	Omar D.	Alegre	Philippines	Department of Energy
28	Mr.	Ariel	Fronда	Philippines	Department of Energy
29	Mr.	Winifrendo	Malabanan	Philippines	Department of Energy

No	Title	First Name	Last Name	Economy / APEC Sub-fora	Organisation
30	Mr.	Joselito	Calip	Philippines	Department of Energy
31	Mr.	Aylmer	Marbello	Philippines	Department of Energy
32	Ms.	Lesly Kim A	De Vera	Philippines	Department of Energy
33	Mr.	Jaime B.	Planas	Philippines	Department of Energy
34	Mr.	Richard S.	Asaytuno	Philippines	Department of Energy
35	Dr.	Chung-Hsien	Chen	Chinese Taipei	Energy Administration, Ministry of Economic Affairs
36	Mr.	Yung-Tung	Chen	Chinese Taipei	Energy Administration, Ministry of Economic Affairs
37	Mr.	Shih-Hua	Hsu	Chinese Taipei	Energy Administration, Ministry of Economic Affairs
38	Mr.	Shin-Hang	Lo	Chinese Taipei	Industrial Technology Research Institute
39	Mr.	Cho-Ting	Tsai	Chinese Taipei	Industrial Technology Research Institute
40	Dr.	Keng-Tung	Wu	Chinese Taipei	EGNRET
41	Dr.	Cary	Bloyd	The United States	Pacific Northwest National Laboratory
42	Mr.	Christian	Roatta	The United States	UL Solutions
43	Mr.	Thi Ngoc Thanh	Hoang	Viet Nam	Ministry of Industry and Trade
44	Prof.	Jinlong	Ma	APSEC	APSEC
45	Mr.	Munehisa	Yamashiro	APERC	APERC
46	Mr.	Jeongdu	Kim	APERC	APERC
47	Mr.	Ting Jui	Sun	APERC	APERC
48	Mr.	Alexander	Izhbuldin	APERC	APERC
49	Mr.	Finbar	Maunsell	APERC	APERC
50	Mr.	Glen	Sweetnam	EGEDA	APERC/EGEDA
51	Dr.	Zeng	Lei	CLASP	CLASP
52	Mr.	Christopher	De La Cruz	PHILGBL	Philippine Green Building Council
53	Ms.	Anna	Tungol	PHILGBL	Philippine Green Building Council
54	Mr.	Christopher	Zamora	ASEAN	ASEAN CENTRE FOR ENERGY
55	Dr.	Zulfikar	Yurnaidi	ASEAN	ASEAN CENTRE FOR ENERGY
56	Mr.	Morgan	Watkins	Land Experts Group	Land Experts Group
57	Ms.	Natalie	Kauf	IEA	International Energy Agency
58	Dr.	Petrichenko	Ksenia	IEA	International Energy Agency
59	Dr.	Jonathan	Sinton	EE Hub	Energy Efficiency Hub