



ASIA PACIFIC ENERGY RESEARCH CENTRE (APERC)

REPORT ON APERC ACTIVITIES

**THE 68TH MEETING OF
THE APEC ENERGY WORKING GROUP (EWG-68)**

12-13 AUGUST 2024

CONTENTS

| | | |
|------|-------------------------------|----|
| I. | PROGRESS IN ONGOING WORK..... | 3 |
| II. | FUTURE WORK PLAN | 19 |
| III. | RESEARCH MANAGEMENT | 19 |
| IV. | APERC RESEARCH STAFF..... | 20 |
| V. | REVENUE AND EXPENSES | 21 |

I. PROGRESS IN ONGOING WORK

1. Research Activities

A. APEC ENERGY DEMAND AND SUPPLY OUTLOOK

BACKGROUND

APERC had previously produced eight editions of the APEC Energy Demand and Supply Outlook.

OBJECTIVE

The key objectives of the APEC Energy Demand and Supply Outlook are to facilitate APEC cooperation by providing policymakers with:

- a useful reference on energy in the APEC region
- a statistically supported review of the challenges and opportunities facing the APEC economies individually and as a region
- a source of ideas and approaches for evaluating these energy challenges and identifying potential solutions and opportunities.

PROGRESS

Work on the Outlook 9th edition is underway.

Same as the Outlook 8th edition, the 9th edition uses APEC energy data instead of IEA to underpin its analysis. In the analysis, a more transparent and open-source approach than previous editions will be applied. The modelling tools developed for Outlook are being used for training activities in APEC economies.

APERC researchers are undertaking modelling of two scenarios, Reference Scenario and Target Scenario, for all economies.

Preliminary model results have been sent out to approximately half of the APEC economies for review and the rest will be sent by the third quarter of 2024. Modelling for all economies (including revisions/amendments) is anticipated to be complete by January 2025.

MILESTONES

The Outlook 9th edition is scheduled to be published in September 2025.

B. APEC ENERGY OVERVIEW

BACKGROUND

At the EGEDA 11th meeting held in March 2000, the APEC Energy Overview was proposed by Australia and approved at the EWG19 meeting in April 2000.

The APEC Energy Overview is an annual publication, which contains updated energy demand/supply data as well as a description of energy policies and notable energy developments in energy efficiency,

infrastructure development, upstream development, energy source diversification, regulatory reform and environmental protection.

Energy demand/supply data are drawn from the APEC Energy Database. APERC is responsible for coordinating information gathered from member economies and preparing a draft Overview for EGEDA review. The Overview is published on both the APEC and APERC websites.

Since the inaugural issue of the 2001 edition, 21 editions have been issued up to 2022.

OBJECTIVE

The objective of the APEC Energy Overview is to share information on the energy policies of member economies and provide useful information and insights to policymakers in the region.

PROGRESS

The APEC Energy Overview 2024 was endorsed by EWG in July 2024.

MILESTONE

Publication of the APEC Energy Overview 2024 is expected in August 2024.

C. TOPICAL STUDIES

BACKGROUND

Along with the Outlook and the Overview, APERC has been conducting research on topics relevant to energy issues and policies in the APEC region.

OBJECTIVE

The objective of the topical studies is to share information on member economies' energy policies and provide useful information and insights to policymakers in the region.

PROGRESS

Since 2017 three separate studies focusing on coal, oil, and natural gas have been designed to support the Expert Group on Clean Fossil Energy (EGCFE) in broadening its perspective. This year a fourth report focusing on hydrogen was added to the series. The reports review supply, demand, trade, and price developments over the past 10-20 years and projected developments over the next 5-7 years.

The APERC Coal Report 2023 and Oil Report 2023 were published in early February 2024. A summary of the draft APERC Hydrogen Report 2023 was presented at the APERC Workshop on the margins of EWG67 in Lima, Peru in February 2024. The Hydrogen Report 2023 and Natural Gas Report 2023 were published in May 2024. Summaries of all four APERC Reports 2023 were presented at the EGCFE 2024 meeting in May in Nanjing, China.

MILESTONE

Summaries of Coal, Oil and Gas Reports 2023 are planned to be presented at the APERC Workshop on the margins of EWG68 in Lima, Peru in August 2024.

APERC will start preparation of the four APERC Fossil Fuel Reports 2024 in the second half of 2024.

2. Accepting Trainees and Dispatching Experts

BACKGROUND

APERC accepts energy modelling trainees, chiefly from developing economies in the APEC region. These trainees learn about preparing energy demand and supply outlooks and related matters.

APERC also sends experts to APEC economies to help develop energy data and prepare energy demand and supply outlooks, including experts on modelling techniques such as data management, energy balance preparation, macroeconomic modelling, and energy supply planning.

OBJECTIVE

The objective is to build the capacity of APEC economies in energy data management and projecting energy demand and supply.

PROGRESS

APERC organized the 30th Seminar on Energy Modelling on 4-8 March 2024 in Tokyo.

In April 2024, APERC dispatched experts to Malaysia's Ministry of Natural Resources and Environmental Sustainability to provide training on energy modelling using the LEAP software.

The cooperation course on "Energy Future of the Asia-Pacific Region" at Kyoto University Graduate School of Energy Science for the school year 2023-2024 started on 14 April and was completed on 21 July 2023.

MILESTONE

APERC will organize the 31st Seminar on Energy Modelling in March 2025.

APERC will dispatch a team of experts to Thailand in October or November 2024 to train on end-use energy modelling using the LEAP software.

The cooperation course at Kyoto University Graduate School of Energy Science for the school year 2024-2025 will start in October 2024.

3. Building Energy Data Management Networks

BACKGROUND

APERC has built an online communication network with energy organizations in APEC member economies. The network allows uniform management of energy data submitted by APEC economies and the preparation of energy balance tables based on the data.

APERC is also the Secretariat of the APEC Expert Group on Energy Data and Analysis (EGEDA) that meets once a year.

APERC supplies data provided by APEC member economies to the Joint Organisations Data Initiative's (JODI) database and works jointly with member economies to improve data quality.

In addition, in order to upgrade Energy Data Management Networks, APERC started to accept energy statistics trainees from developing APEC economies under the EGEDA Training Program on Energy Statistics. APERC also started to send experts to APEC economies to help improve the quality of their energy statistics.

OBJECTIVE

The key objectives are:

1. To improve the availability and consistency of energy data and to develop, manage and review the operation of an up-to-date and consistent APEC Energy Database, principally covering energy demand and supply data.
2. To continue to develop an APEC energy data collection and dissemination network.
3. To participate in international cooperation/collaboration activities on energy statistics with the United Nations Statistics Division (UNSD), International Energy Agency (IEA), The International Renewable Energy Agency (IRENA), the Joint Organisations Data Initiative (JODI) and other international organizations.
4. To implement energy statistics training courses for APEC member economies.
5. To track the APEC aspirational goals on reducing energy intensity by 45% in 2035 from 2005 levels and doubling the 2010 share of renewable energy in the APEC energy mix by 2030 and other similar measurable goals that may be set by the energy ministers.
6. To report to and advise the APEC EWG on each of the above activities.

PROGRESS

In April 2015, APERC established the internal Energy Statistics & Training Office (ESTO) to ensure efficient progress with activities described under points 3 and 4 above.

APERC collected and processed the 2021 annual energy supply and demand data from the 21 member economies. The APEC Energy Statistics 2021 and APEC Energy Handbook 2021 were published in April 2024. APERC decided to print only the latter, while the former was made available online.

The 22nd APEC Workshop on Energy Statistics, focusing on tracking the progress of capacity built from the last workshops was held on 23-26 July 2024 in Tokyo, Japan. The workshop aimed to follow up on improvements in data collection made by member economies after the previous workshops that EGEDA conducted in 2020, 2021, 2022 and 2023. Experts from IEA, IRENA and the US EIA were invited as guest speakers.

As for the EGEDA Training Program on Energy Statistics for the fiscal year 2023/2024, the short-term course was held from 22 January to 2 February 2024. There were 12 participants from 9 economies namely: Brunei Darussalam, Chile, Malaysia, Papua New Guinea, the Philippines, Singapore, Chinese Taipei, Thailand and Viet Nam.

MILESTONE

The APEC Energy Statistics 2022 and APEC Energy Handbook 2022 will be published in the first quarter of 2025. While the APEC Energy Handbook will continue to be printed, the APEC Energy Statistics 2022 will be made available only online.

As for the EGEDA Training Program on Energy Statistics for the fiscal year 2024/2025, the short-term course will be held on 3-14 February 2025. APERC will not hold the 8-weeks middle-term course during this fiscal year to review the effectiveness of the course and to lessen the workload of the ESTO staff for training. The review is still ongoing.

4. Policy Cooperative Activities

A. PEER REVIEW ON ENERGY EFFICIENCY (PREE)

BACKGROUND

Improving energy efficiency offers many cost-effective opportunities to achieve energy security, improve business productivity and mitigate greenhouse gas emissions. In the Sydney Declaration of September 2007, APEC Leaders agreed to start a peer review of energy efficiency policies through the voluntary APEC Energy Peer Review Mechanism.

At the EWG35 meeting (Iquitos, March 2008), the APEC Peer Review on Energy Efficiency (PREE) was proposed by Japan and endorsed by EWG members.

These activities are undertaken as part of the PREE, namely:

1. Peer Review of volunteer member economies on the progress towards their goals in energy efficiency improvement ('Peer Review of volunteer member economies') including following up of implementation of recommendations at former hosting economies of Peer Review (Follow-up PREE) since 2012; and
2. Energy Efficiency Policy Workshop which provides a capacity building opportunity for robust policymaking development in APEC, succeeding the Cooperative Energy Efficiency Design for Sustainability (CEEDS) workshops for the same purpose.

1. PEER REVIEW

OBJECTIVE

The objectives of the APEC Peer Review of Energy Efficiency (PREE) are:

1. To share information on energy efficiency performance as well as policies and measures for improving energy efficiency among member economies;
2. To provide opportunities for learning from other member economies' experiences and for broadening communication among energy efficiency policy experts;
3. To explore how energy efficiency overall/sectorial goals and action plans could be effectively formulated in each APEC economy under review, taking into account the diversity of possible strategies to be used;

4. To monitor progress toward attaining energy efficiency goals on an overall and/or sectoral basis and toward implementing action plans; and
5. To provide recommendations on how the implementation of action plans could be improved to achieve energy efficiency goals.

PROGRESS

Guidelines for the Peer Review were endorsed by EWG in late 2008.

The inaugural Peer Review for New Zealand was carried out during the period of 23-27 February 2009. This was followed by Peer Review for Chile during the period of 16-20 March 2009. The draft Review Reports of PREE for New Zealand and Chile were discussed and endorsed by EWG members at the EWG37 meeting in Santiago in April 2009.

The third Peer Review on Viet Nam was conducted on 8-12 June 2009. The draft Review Report of PREE for Viet Nam was discussed and endorsed by EWG members at the EWG38 meeting in Bali in November 2009.

The fourth Peer Review on Thailand was carried out on 9-13 November 2009. The draft Review Report of PREE for Thailand was discussed and endorsed by EWG members at the EWG39 meeting in Tokyo in March 2010.

The fifth Peer Review on Chinese Taipei was carried out on 23-27 August 2010. The draft Review Report of PREE for Chinese Taipei was discussed and endorsed by EWG members at the EWG40 meeting in Brunei-Darussalam in November 2010.

The sixth Peer Review on Peru was carried out on 8-12 November 2010. The seventh Peer Review for Malaysia was carried out on 26 November-3 December 2010. The draft Review Reports of PREE for Peru and Malaysia were discussed and endorsed by EWG members at EWG41.

The eighth PREE on Indonesia was carried out on 10-14 October 2011. The draft Review Report of PREE for Indonesia was discussed and endorsed by EWG members at the EWG43 meeting.

The ninth PREE on the Philippines was carried out on 6-10 February 2012. The draft Review Report of PREE for the Philippines was discussed and endorsed by EWG members at the EWG44 meeting.

The first Follow-up PREE activity, a training workshop on analytical methods to monitor the effectiveness of implementing energy efficiency measures, was carried out in Viet Nam on 27 February-2 March 2012. The Summary Report was submitted to the EWG44 meeting.

The tenth PREE on Brunei Darussalam was carried out on 11-15 June 2013. The draft Review Report of PREE on Brunei Darussalam was discussed and endorsed by EWG members at the EWG46 meeting.

The second Follow-up PREE in the Philippines, focusing on industrial sectors and commercial buildings, was carried out on 15-19 September 2014. The draft Review Report was discussed and endorsed by EWG members at the EWG48 meeting.

The third Follow-up PREE in Thailand was focused on the transport sector. During 3-7 August 2015, six experts from Australia; Indonesia; Japan; the United States (two); and UNEP participated in the Follow-up Peer Review. The draft Review Report was discussed and endorsed by EWG members before the EWG50 meeting.

The 11th PREE in Mexico was carried out on 6-10 March 2017. The review team completed the workshops in Mexico with the relevant agencies and Ministries. The final report was completed and circulated to the EWG members for their endorsement in October 2017, with 46 recommendations across eight fields of energy efficiency.

The Follow-up PREE in Malaysia (PREE Phase 7) was carried out on 26-30 March 2018. The focus sector for the peer review was the transportation and industry sectors. Six experts from Australia; Indonesia; Malaysia; Thailand; the USA, and International Energy Agency (IEA) joined the Follow-Up PREE Malaysia. The final report was published in November 2018.

The 12th PREE planned to take place in Russia (PREE Phase 8), was initially scheduled for October 2018. However, due to the restructuring of the federal government of Russia, it was cancelled.

The Follow-up PREE in Peru (PREE Phase 9) was conducted on 18-22 March 2019 in Lima, Peru. The Review Expert Team was composed of six experts from five APEC economies (Hong Kong, China; Mexico; New Zealand; Thailand and the USA) and an expert from the German Corporation for International Development (GIZ). Unlike previous Follow-up PREEs, this one was not focused on a specific sector and was an overall assessment of energy efficiency, as per the request of the Peruvian government. The Expert Team gave 47 preliminary recommendations on six subsectors. Around 40 participants attended the peer review meeting, and 26 presentations from 12 different relevant organizations were made. The Follow-Up PREE report was drafted by APERC and was endorsed by EWG in February 2020. The final report is available on the APEC and APERC websites.

The Follow-up PREE for Indonesia (PREE Phase 10) was held online on 9-11 November 2021. The focus sector for the review were the transport, industry, buildings, home appliances and energy supply sectors. The final report of the Follow-up PREE in Indonesia (PREE Phase 10) was published in June 2022 and is available both on APEC and APERC websites.

The Follow-up PREE in Chile (PREE Phase 13) was conducted from 6-10 May 2024. The review team visited Santiago de Chile and held a 5-day workshop with comprehensive discussions on energy efficiency with representatives and experts from the government, energy regulator, and the Sustainable Energy Agency. The drafting of the Follow-up PREE in Chile summary report is ongoing.

MILESTONE

The summary report of the Follow-up PREE in Chile is planned to be submitted to the APEC Secretariat after EWG68.

2. ENERGY EFFICIENCY POLICY (EEP) WORKSHOP

OBJECTIVE

In order to streamline and prioritize its activities, APERC decided to integrate the Cooperative Energy Efficiency Design for Sustainability (CEEDS) project into PREE as a forum to discuss key issues in the previous PREEs further and to hold an 'Energy Efficiency Policy (EEP) Workshop' once a year in cooperation with EGEEC instead of CEEDS workshops.

PROGRESS

A trial EEP Workshop in conjunction with EGEEEC45 in Singapore was held on 23 March 2015 as a Self-Funded project. The focus was on the fundamentals of energy efficiency policymaking and the development of stable funding mechanisms for agencies and programmes.

The first EEP Workshop was held in conjunction with EGEEEC47 as part of PREE Phase 5, focusing on energy efficiency policy and program evaluation.

The second EEP Workshop was carried out in Jeju Island, Korea, alongside the EGEEEC 49 meeting. Based on feedback from economies, the topic of energy efficiency policy evaluation was selected again, but in greater depth and with more specific practical applications. This workshop was attended by 30 participants from 15 APEC member economies. The feedback was very positive, including verbal encouragement to continue with this from several attendees. The EEP Workshop Summary Report: Policy and Program Evaluation II was published in June 2017.

The third EEP Workshop was held in Washington, D.C., USA, on 10 April 2018, alongside the EGEEEC51 meeting. The workshop focused on conformity assessment – the process of ensuring a product or service meets the standards or regulations it is designed or advertised for – and was delivered mainly by the CLASP consultancy with additional presentations by several invited experts. There were 29 participants from 11 economies. A summary report was published on the APEC and APERC websites in early September 2018.

The fourth EEP Workshop was held in Hong Kong, China, on 18 March 2019, alongside the EGEEEC53 meeting. The workshop was titled “Energy Efficiency in the Transport Sector: Developing Policy for Fuel Economy Regulation” and was delivered mainly by the Retyna consultancy with additional presentations by invited experts and economy representatives. There were 41 participants from nine economies. A summary report was published on the APEC and APERC websites.

The fifth EEP Workshop was held on 18 November 2020 in conjunction with the 55th EGEEEC meeting online. The workshop was titled “Economic Recovery through Energy Efficiency,” and it covers some ways in which strengthening energy efficiency policy and making investments in energy efficiency can stimulate economic growth. More than 60 participants were present. A summary report of the workshop was published in January 2021.

The sixth EEP Workshop (PREE Phase 11) was held online on 29 March 2022 in conjunction with the EGEEEC58 meeting which was hosted by China. Its theme was energy efficiency project financing. 47 participants from 13 APEC economies attended the workshop and they discussed investment expansion tools and financing models for energy efficiency projects. A summary report was published in July 2022 and its main points were presented at EWG64 through the APERC workshop.

The seventh EEP Workshop (PREE Phase 12) was held in the Philippines on 16 October 2023 in conjunction with the EGEEEC61 and EGNRET59. The workshop was titled “Electrification and Energy Efficiency.” 28 participants from 10 economies attended the workshop discussing and exchanging the issues on energy efficiency and electrification toward a decarbonized power system. A summary report was endorsed by EWG members in February 2024 and published on the APEC and APERC websites in March 2024.

MILESTONE

The eighth EEP Workshop will be held in conjunction with the 63rd EGEEEC meeting, in Tianjin, China, on 5 November 2024. The theme of this workshop will focus on integrating international standards and policy instruments for advancing energy management systems. APERC will invite international organizations and some economies to discuss and exchange policy planning and implementation on energy management and energy audit.

B. PEER REVIEW ON LOW-CARBON ENERGY POLICIES (PRLCE)

BACKGROUND

In their Fukui Declaration in June 2010 on ‘Low-Carbon Paths to Energy Security: Cooperative Energy Solutions for a Sustainable APEC’, the APEC Energy Ministers instructed the EWG to ‘explore mechanisms to encourage economies to set individual goals and action plans for introducing low-emission power sources, building upon the success of the PREE, with assistance from APERC and relevant technology expert groups.’

Modelled on the successful Peer Review of Energy Efficiency (PREE), PRLCE assists volunteer economies in developing policies that support energy security and environmental protection through promoting low-carbon energy supply (e.g. renewable energies).

OBJECTIVE

The objectives of the PRLCE are:

1. To share experiences and knowledge among APEC economies on the best practices to promote low-emission power sources by means of the elaboration of a Peer Review Report on Low-Carbon Energy Policies;
2. To elaborate a Peer Review Report on Low-Carbon Energy Policies for APEC economies, attending to their particular circumstances and conditions, so that the strategies and measures recommended are the most efficient for contributing to the design of effective public policies in this field; and
3. To provide peer-reviewed recommendations that might be voluntarily adopted to encourage APEC economies to introduce or accelerate their power supply from low-emission sources, monitoring their progress to assess their effectiveness.

PROGRESS

Guidelines for PRLCE were endorsed by EWG members in August 2011.

The first PRLCE focused on renewable energy was held in Thailand on 21-25 May 2012. The peer review was conducted by a team of nine experts (from China; Japan; Malaysia; Chinese Taipei; the United States; Viet Nam; IRENA; and APERC). The draft Review Report of PRLCE in Thailand was discussed and endorsed by EWG members at the EWG44 meeting.

The second PRLCE focused on the National Renewable Energy Program (including the Feed-in Tariff (FIT) system for renewable energy) was held in the Philippines on 19-23 November 2012. The peer review was conducted by a team of nine experts (from China; Japan; Malaysia; New Zealand; Thailand; IRENA; and APERC). The draft Review Report of PRLCE for the Philippines was discussed and endorsed by EWG members at the EWG46 meeting.

The third PRLCE focused on renewable energy was held in Indonesia on 13-17 May 2013. The peer review was conducted by a team of eight experts (from China; Japan; Malaysia; Thailand; the United States; and APERC). The draft Review Report of PRLCE for Indonesia was discussed and endorsed by EWG members at the EWG46 meeting.

The fourth PRLCE for Malaysia focused on renewable energy was held on 9-13 December 2013. The peer review was conducted by a team of nine experts (from Australia; China; Japan; New Zealand;

Chinese Taipei; Thailand; and APERC). The draft Review Report of PRLCE for Malaysia was discussed and endorsed by EWG members at the EWG47 meeting.

The fifth PRLCE for Viet Nam focused on renewable energy was held on 18-22 January 2016. The peer review was conducted by a team of 12 experts (from Australia; Japan; Korea; New Zealand; the Philippines; Chinese Taipei; Thailand; and APERC). The draft Review Report of PRLCE for Viet Nam was endorsed by EWG members through circulation and published on the APEC website as well as the APERC website.

The sixth PRLCE for Papua New Guinea focused on hydropower resources was held on 1-4 August 2017. The peer review was conducted by a team of 11 experts (Hong Kong, China; Indonesia; New Zealand; the Philippines; Chinese Taipei; Thailand, the US and APERC). The Review Report of PRLCE for PNG was endorsed and posted on the APEC and APERC websites.

The seventh PRLCE for Peru focused on energy efficiency policies development and deployment, buildings, electromobility, and district energy systems, among others, was held on 5-7 December 2023. The peer review was conducted by a team of nine experts (Australia; China; Chinese Taipei; the United States, UNEP-Copenhagen and APERC).

MILESTONE

The Summary Report of PRLCE for Peru is awaiting EWG approval.

C. OIL & GAS SECURITY INITIATIVE (OGSI)

BACKGROUND

APEC Energy Ministers met in St. Petersburg, Russia, on 24-25 June 2012. They encouraged the EWG and APERC to work on activities to improve the response to oil and gas emergency situations, including emergency response workshops and exercises. EWG and APERC are expected to perform these activities in collaboration with the International Energy Agency (IEA) and the Association of Southeast Asian Nations (ASEAN).

This instruction by energy ministers was confirmed at the highest level: APEC leaders agreed to promote activities to improve the response to oil and gas emergency situations in the APEC region at Vladivostok, Russia, on 8-9 September 2012.

As part of the APEC Oil & Gas Security Exercises (OGSE), APERC organized two fora and two exercises. The first Security Forum, a kick-off meeting, was held on 18-19 April 2013 in Tokyo. Scenarios for the Security Case Study Exercises were developed by APERC with the cooperation of outside experts. The first exercise was a joint exercise by Southeast Asian APEC economies on 17-19 September 2013, held in Bangkok, Thailand. The second exercise was carried out for Indonesia on 22-24 October 2013 in Jakarta. The results of the two exercises were presented at the second Security Forum, a wrap-up meeting held on 25 March 2014 in Tokyo. Likewise, the APERC's survey on the Development of APEC's Approach to Oil and Gas Security was drafted and discussed during the said Forum. Results of the Exercises and the survey were compiled into a Final Report, which was presented to the EWG47 meeting.

In reporting the result of OGSE to the EWG47 meeting, APERC proposed the APEC Oil & Gas Security Initiative (OGSI), a new project which succeeded OGSE. OGSI consists of three pillars: Oil & Gas Security Exercise (OGSE) on a voluntary basis and not on a scheduled basis, Oil & Gas Security Network (OGSN) by officials in charge of oil and gas security policy in each economy, and Oil & Gas Security Studies (OGSS) on research topics related to oil and gas security in the APEC region.

OGSI was endorsed as an APEC Self-Funded project at the EWG48 meeting.

OBJECTIVE

The key objectives of OGSI's major pillars are:

1. To provide vital information on global developments and issues on oil and gas security;
2. To share experiences and insights on the challenges confronting the APEC economies relating to oil and gas security and supply emergency threats; and
3. To establish and apply APEC Oil and Gas Security Exercise Model Procedure as a guiding framework to address different emergency supply scenarios.

PROGRESS

The Philippines volunteered to undertake the first APEC Oil and Gas Security Exercise (OGSE) under the Oil and Gas Security Initiative, focusing on oil and gas supply emergencies. The OGSE in the Philippines was held in Manila on 7-9 December 2015. This OGSE was also the first case to apply and test the implementation of the APEC Oil and Gas Security Exercise Model Procedure (EMP). The report of OGSE in the Philippines was presented at the second Energy Resiliency Task Force meeting held in conjunction with the EWG51 meeting.

The second OGSE in Australia was held in Melbourne on 29-31 March 2017 with a focus on regional capacity building. Representatives from Indonesia, the Philippines, and Thailand also participated.

The third OGSE in Peru was held in Lima on 6-8 November 2017. Its final report was published on the APEC and APERC's websites in July 2018.

The fourth OGSE in Chile was held in Santiago on 13-15 March 2019. It was a 'blind' exercise where participants were briefed about hypothetical oil and gas supply disruptions without prior notice, with seven experts from different institutions forming the Review Expert Team. The final report was endorsed by EWG and has been available on the APEC and APERC websites since December 2019.

The fifth OGSE which was postponed in 2020 due to the COVID-19 pandemic took place in Bangkok on 6-8 September 2023 hosted by the Ministry of Energy of Thailand. The exercise covered the supply emergency scenarios in oil and gas.

The OGS Newsletter, which is part of the Oil and Gas Security Network (OGSN), is being produced and has been circulated bi-monthly since December 2014. To date, 54 OGS Newsletters have been released. In conjunction with APERC's independence in April 2020, all articles in OGS Newsletter have been solely written by the APERC researchers starting from the 33rd issue released in the same month.

The first OGSN Forum was held in Kitakyushu City, Japan, on 23-24 April 2015 and the initial results of the OGSS as well as EMP were presented. The second OGSN Forum was held in Kagoshima City, Japan, on 10-11 March 2016, and APERC reported the implementation of OGSE in the Philippines, the results and the progress of OGSS. Representatives from 19 APEC economies and five international and regional energy organizations participated in the Forum. Australia held a session on the risk management principles for energy security. The third OGSN Forum was held in Irkutsk City, Russia, on 29-30 June 2017. The fourth OGSN Forum was held in Tokyo, Japan, on 7-8 March 2018 in conjunction with the EGCFE Oil & Gas meeting on 9 March 2018. The fifth OGSN Forum was held in Sendai City, Japan, on 10-12 April 2019 in conjunction with the second EGCFE Oil and Gas meeting. The sixth OGSN Forum was virtually held on 21 April 2023 after four years of postponement due to the COVID-19 pandemic in conjunction with EGCFE 2023 on 20 April 2023, which was the

first meeting after the rescoping of the expert group. The seventh OGSN Forum was held in person in Osaka, Japan, on 20-21 March 2024.

Six OGSS reports on Oil Supply Security and Emergency Policy in the APEC region, the Impact on Oil Distribution, the Energy Reform in Mexico, Prospects and Compromise Points of the Arab Spring, Petroleum Product Trading and Security, and Melting of the Arctic Sea Ice were published on the APERC website in November 2015. One report on Plans for Fuel Supplies during Disasters in Expectation of Nankai Megathrust Earthquakes was published in October 2016. Four studies on Oil and Gas Security Indexation, Impact of Low Oil Price on Energy Security, Natural Gas Security in APEC, and Superiority of LPG: A Disaster-Resistant Energy Source were published in 2017. Three more reports were published in the summer of 2018: Energy Security of APEC Economies and Changing Downstream Oil Environment, Investments in Natural Gas Supply Chain under the Low Price Environment, and APEC Oil and Gas Security Indexation 2017 Update. In 2019, two reports were completed and published in September: Small-scale LNG in Asia Pacific and Emerging Energy Security Risks in Changing Energy Landscape. The 17th OGSS report entitled “Changing LNG Market Dynamics – Impacts on Supply Security in the APEC Region” was published in September 2020. The 18th OGSS report entitled “Impact of COVID-19 on Oil and Gas Security” was published in April 2022. The 19th OGSS report entitled “Oil and Gas Security During the Energy Transition” was published in September 2023.

The summary report of the 5th OGSE in Thailand was approved in February 2024 and published on both APEC and APERC websites.

MILESTONE

The OGS Newsletter will continue to be published every other month, and the next issue (Issue No. 59) is scheduled to be published in August 2024.

The draft of the 20th OGSS report entitled “What are the energy security implications of recent declines in both APEC and global spare petroleum refining capacity?” was presented at the OGSN Forum in March 2024 and the EGCFE 2024 Joint Meeting in May 2024. The final report will be presented at EWG 68 in August 2024. The 20th OGSS report is planned to be published on APEC website towards the end of 2024 after approval from EWG.

Two potential topics for the 21st OGSS were discussed at the 7th OGSN Forum in March. The first topic, "The Energy Security Implications of Declining LNG Investment", was further discussed and eventually approved for the 21st OGSS at the EGCFE 2024 meeting. The second topic, "The Implications of Underinvestment in Upstream Oil Sector Chain to Oil Supply Security of APEC", will be considered for the 22nd OGSS.

D. ENERGY RESILIENCY ENHANCEMENT PROJECT

BACKGROUND

In recent years, APEC member economies have been suffering from natural disasters such as earthquakes and typhoons, causing severe damage to the energy infrastructure. In this narrative, EWG established APEC Energy Resiliency Principle (the Principle) with the great help of Energy Resilience Task Force and APEC member economies. Under the Principle, three virtual workshops were held in Chile and Chinese Taipei in January 2022, and in the Philippines in February 2022 and the APEC Energy Resiliency Guidelines were approved by EWG in January 2023.

APERC supported Japan’s Ministry of Economy, Trade and Industr CORE, the project contractor, to prepare for holding three workshops smoothly, especially logistics matters.

OBJECTIVE

As the follow-up actions based on the Principle, the Energy Resiliency Enhancement Project aims to enhance the ability to secure a stable energy supply by effectively dealing with disasters and implements the following key activities as the first phase project (the Project).

- 1) Develop an evaluation model by identifying, collecting, and assessing indicators to evaluate energy resiliency,
- 2) Create Energy Resiliency Sectoral Guidelines for energy infrastructure companies to promote initiatives in the public and private sectors, and
- 3) Hold a workshop to raise awareness and knowledge of energy resiliency in the region.

PROGRESS

The Workshop on Energy Resiliency Enhancement was held in person in San Francisco, the USA, in November 2023.

The Project was delayed because of the contracting process with the contractor and the unexpected change in the contractor's organization. The extension request of the Project period was submitted and approved to change the Project end date from December 2023 to May 2024.

The sectoral guidelines and the project summary report were endorsed in May 2024.

MILESTONE

APERC continues to support Japan's Ministry of Economy, Trade and Industry (METI) with the Institute of Energy Economics, Japan (IEEJ), the project contractor, to prepare the completion report by the end of August 2024.

E. SYMPOSIA ON HOLISTIC APPROACH OF DECARBONIZATION FOR ENERGY TRANSITION

BACKGROUND

Regarding energy transitions, there is no "single best solution" for achieving carbon neutrality, as each economy has different economic and social structures and geographical situations. APERC considers that various, pragmatic, and sustainable energy transitions, that reflect the different circumstances of each economy, are essential. To achieve such energy transitions, sharing knowledge and experience among members is important.

APERC organized the APEC Symposium on the Holistic Approach of Decarbonization towards Carbon Neutrality as an APEC project under the auspices of Japan's METI. It was held online on 30-31 August 2021 and its summary report was endorsed in February 2023.

OBJECTIVE

The objective of this Project is to hold sectoral symposia to follow up the APEC Symposium on the Holistic Approach of Decarbonization towards Carbon Neutrality held in 2021 to further discuss two issues, which are important elements of that holistic approach. One is the decarbonization of fossil fuel use including hydrogen, ammonia and CCUS, and the other is energy efficiency and energy management system.

PROGRESS

Two symposia were originally planned to be held in the third quarter of 2022 and/or the first half of 2023. However, due to the effects of Covid-19 and the Ukraine situation, both two symposia were delayed and postponed.

The first sectoral Symposium on Decarbonizing Fossil Fuels was held in person in Kobe, Japan in October 2023.

The second sectoral Symposium on Promoting Energy Efficiency and Energy Management System was held in person in Tokyo, Japan, in January 2024.

The key highlights of the 2 symposia were presented at the APEC Energy Transition Workshop in Nanjing, China, in May 2024, in conjunction with the EGEEC62 & EGCFE 2024 Joint Meeting.

The project summary report was endorsed in May and published in June 2024.

MILESTONE

The 3rd sectoral Symposium on Bioenergy will be co-organized with the Ministry of Energy, Thailand, in November 2024 in Khon Kaen, Thailand.

II. FUTURE WORK PLAN

APERC's Future Work Plan is designed to assist EWG in responding to the instructions by APEC Energy Ministers for the coming years as described in Part I.

APERC conducts research activities, particularly producing the *APEC Energy Demand and Supply Outlook*. In addition, APERC, as the designated executant, assists project overseers by carrying out APEC projects on the condition that a budget from the APEC fund is approved for those projects by the APEC BMC.

As agreed in EWG47, APERC is now directly responsible to EWG. APERC will keep close cooperation with the Expert Group of Energy Data and Analysis (EGEDA) as well as other expert groups and taskforces under EWG in planning and implementing its activities.

1. Research Activities

A. APEC ENERGY DEMAND AND SUPPLY OUTLOOK

The Outlook 9th edition is scheduled to be published in September 2025. APERC is currently modelling two scenarios, Reference Scenario and Target Scenario, to share with economies by the end of the third quarter of 2024.

B. APEC ENERGY OVERVIEW

The APEC Energy Overview 2024 is expected to be published in August 2024.

C. TOPICAL STUDIES

APERC will publish three Fossil Fuel Reports (Coal, Gas, and Oil) in 2024 in support of the EGCFE and a Hydrogen Report in 2024 in support of both the EGCFE and EGNRET. In addition, APERC

will encourage its researchers to conduct research on energy affairs and policies in the APEC region for the interest of APEC economies as well as for the preparation of the Outlook 9th edition.

2. Accepting Trainees and Dispatching Experts

APERC will organize the 31st Seminar on Energy Modelling in March 2025. Experts will be dispatched to Thailand for a seminar on end-use energy modelling using the LEAP software in October or November 2024.

3. Building Energy Data Management Networks

The following are the plans for FY2024/2025:

1. Collect, process and analyze the 2022 annual energy demand and supply data,
2. Publish the APEC Energy Statistics 2022 and APEC Energy Handbook 2022,
3. Hold the EGEDA short-term training course on energy statistics in February 2025,
4. Participate in international cooperation on energy statistics such as the Energy Statistics Development Group (ESDG) of IEA, JODI, International Energy Statistics (InterEnerStat) meetings, etc.

4. Policy Cooperative Activities

A. PREE

The eighth EEP Workshop will be held in November 2024 in conjunction with the EGEEEC63 meeting. To succeed PREE activities, APERC plans to hold Capacity-Building Workshops for Energy Efficiency and Conservation Policy in conjunction with the EGEEEC biannual meetings from 2025 onward.

B. PRLCE

To succeed PRLCE activities, APERC is considering holding Capacity-Building Workshops for New and Renewable Energy Policy in conjunction with the EGNRET biannual meetings from 2025 onward.

C. OIL & GAS SECURITY INITIATIVE (OGSI)

APERC is encouraging an economy to host the sixth OGSE in 2024.

APERC will continue to issue OGS Newsletter every other month. The eighth OGSN Forum is planned to be held in 2025.

The 20th OGSS report will be published on the APEC and APERC websites by the end of this year.

Two potential topics for the 21st OGSS report were discussed at the 7th OGSN Forum in March. The first topic, "The Energy Security Implications of Declining LNG Investment", was further discussed and eventually approved for the 21st OGSS at the EGCFE 2024 meeting. The second topic, "The Implications of Underinvestment in Upstream Oil Sector Chain to Oil Supply Security of APEC", will be considered for the 22nd OGSS.

D. ENERGY RESILIENCY ENHANCEMENT PROJECT

APERC will assist Japan's METI in preparing the completion report.

E. SYMPOSIA ON THE HOLISTIC APPROACH OF DECARBONIZATION FOR ENERGY TRANSITION

The 3rd sectoral Symposium on Bioenergy will be co-organized with the Ministry of Energy, Thailand in November 2024.

III. RESEARCH MANAGEMENT

1. APERC Annual Conference

The APERC Annual Conference is held to gather experts from around the world to help APERC's research activities.

The 2025 APERC Annual Conference will take place on 28-29 May 2025.

2. APERC Advisory Board

Establishing the APERC Advisory Board was endorsed by the EWG16 meeting in Cairns, Australia, in August 1998. The Terms of Reference were endorsed by the EWG17 meeting in Oakland, the United States, in April 1999.

The Advisory Board is a group of representatives of major research institutions located in the APEC region who help facilitate APERC's cooperative research. Its primary role is to give professional advice on APERC's ongoing and proposed research, such as methodologies, approaches, databases, and information sources, as well as relevant experts to be involved. APERC carefully considers the advice provided by its Advisory Board members in proposing its research plan to the EWG.

The 2025 Advisory Board Meeting will be held on 28 May 2025 in conjunction with the APERC Annual Conference.

IV. APERC RESEARCH STAFF

APERC visiting researchers are generally drawn from energy research organizations, both government and non-government, in APEC member economies. The minimum term of visiting researchers supported by APERC's budget is one year, which may be extended subject to consultations between APERC and the visiting researcher.

APERC would like to invite all economies to nominate candidates for visiting researchers to serve at APERC. In principle, APERC accepts one researcher from each APEC member economy.

APERC offers to the visiting researchers: 1) living allowance; 2) furnished housing in Tokyo; 3) family, education, commuting and moving allowances; and 4) health insurance.

As of 1 August 2024, APERC has a total of 27 research staff, of which 16 are visiting researchers from APEC economies.

Table 1: APERC Research Staff

| Name |
|-----------------------------------------------------|
| Kazutomo IRIE (President) |
| Glen SWEETNAM (Senior Vice President)* |
| Munehisa YAMASHIRO (Vice President/General Manager) |
| Yoshiaki IMAIZUMI (Deputy General Manager) |
| Edito BARCELONA |
| Thanan MARUKATAT* |
| Elvira Torres GELINDON |
| Alexander Konstantinovich IZHBULDIN* |
| Manuel Antonio Heredia HEREDIA MUNOZ* |
| PHUNG Quoc Huy* |
| Zhichao LI* |
| Ting Jui SUN* |
| Juniko Parlingman PARHUSIP* |
| Mohd Shah Hambali Bin ARIFIN* |
| Jungyoon KIM* |
| Nobuhiro SAWAMURA |
| Muhammad Nabih Fahkri MATUSSIN* |
| Rodrigo MARTINEZ PICAZO* |
| Noriel Christopher Regis REYES* |
| Leanne Nicole SARGENT* |
| Yasmin FOULADI* |
| Risa PANCHO |
| Finbar Barton MAUNSELL* |
| Phawida NOGUCHI |
| Hyuga KASAI |
| Takako HANNON |
| Ikuno YAMAGUCHI |

* Visiting Researchers from APEC economies.

V. REVENUE AND EXPENSES

Since its inception, APERC's budget has been provided by the Japanese government and, in fiscal 2004, 2005 and 2006, also by the Australian government.

This budget has been used to facilitate research activities, cooperative efforts, know-how transfer programmes to the member governments, and the energy data network service.

The table below is a summary of annual financial statements since APERC was established in July 1996.

Table 2: APERC Revenues and Expenses

Unit: million yen

| Fiscal Year | 1996 9mns | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|----------------------------------------------------------------------------------------------------------------|--------------|------|------|------|------|------|------|------|----------|----------|----------|------|------|------|------|
| Revenue from: Japanese Government Australian Government | 374 | 626 | 681 | 729 | 619 | 634 | 594 | 547 | 525 8 | 528 8 | 498 8 | 446 | 447 | 418 | 409 |
| Total of Revenue | 374 | 626 | 681 | 729 | 619 | 634 | 594 | 547 | 533 | 536 | 506 | 446 | 447 | 418 | 409 |
| Expenses: | | | | | | | | | | | | | | | |
| Energy Efficiency/APEC Energy Demand & Supply Outlook/ Related Research Programmes Oil & Gas Security | 227 | 443 | 494 | 550 | 455 | 469 | 434 | 390 | 379 | 377 | 377 | 338 | 339 | 318 | 315 |
| Energy Data Network & Know-How Transfer | 147 | 183 | 187 | 179 | 164 | 165 | 160 | 157 | 154 | 159 | 129 | 108 | 107 | 100 | 94 |
| Total of Expenses | 374 | 626 | 681 | 729 | 619 | 634 | 594 | 547 | 533 | 536 | 506 | 446 | 447 | 418 | 409 |
| Fiscal Year | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | |
| Revenue from: Japanese Government | 425 | 494 | 580 | 657 | 653 | 689 | 672 | 672 | 672 | 672 | 672 | 672 | 672 | 556 | |
| Total of Revenue | 425 | 494 | 580 | 657 | 653 | 689 | 672 | 672 | 672 | 672 | 672 | 672 | 672 | 556 | |
| Expenses: | | | | | | | | | | | | | | | |
| Energy Efficiency/APEC Energy Demand & Supply Outlook/ Related Research Programmes Oil & Gas Security | 308 | 325 | 325 | 432 | 501 | 522 | 423 | 388 | 406 | 338 | 330 | 474 | 492 | 421 | |
| | | | 107 | 68 | 183 | 124 | 161 | 119 | 100 | 59 | 43 | 224 | 263 | 175 | |
| Energy Data Network & Know-How Transfer | 94 | 86 | 68 | 100 | 97 | 91 | 86 | 73 | 44 | 40 | 90 | 90 | 82 | 79 | |
| Total of Expenses | 402 | 411 | 500 | 600 | 781 | 737 | 670 | 580 | 550 | 437 | 463 | 788 | 837 | 675 | |