



**Asia-Pacific
Economic Cooperation**

2019/EWG58/011
Agenda Item: 5a

Asia Pacific Energy Research Centre President's Report

Purpose: Information
Submitted by: APERC



58th Energy Working Group Meeting
Antofagasta, Chile
16-17 October 2019



**ASIA PACIFIC ENERGY RESEARCH CENTRE
(APERC)**

REPORT ON APERC ACTIVITIES

**THE 58TH MEETING OF
THE APEC ENERGY WORKING GROUP (EWG-58)
ANTOFAGASTA, CHILE
16-17 OCTOBER 2019**

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I. PROGRESS IN ON-GOING WORK

1. Activities Supporting Energy Efficiency Achievements and Other Policy Objectives

A. APEC ENERGY DEMAND AND SUPPLY OUTLOOK

BACKGROUND

APERC has previously produced seven editions of the APEC Energy Demand and Supply Outlook. The latest version is the seventh edition published in May 2019.

OBJECTIVE

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

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

PROGRESS

APERC has completed the seventh edition of the APEC Energy Demand and Supply Outlook, which now includes projections extending to 2050. Numerous improvements to the various outlook models were made, including the development of bottom-up, end-use driven buildings and industry models; development of supply and refinery models and an integrating module; and improvements to the power and transport models. Three scenarios were developed. The Business as Usual (BAU) Scenario projects a continuation of existing and announced policies. The APEC Target Scenario combines the APEC Energy Intensity Goal and the Doubling Renewables Share Goal. The 2 Degrees Celsius Scenario explores a pathway that, assuming joint action, provides a 50% chance of limiting global temperature increases to 2 degrees Celsius, as set forth in the 2015 Paris Agreement.

As with past editions, the Outlook seventh edition is comprised of two volumes: Volume I provides APEC-wide results and Volume II provides the outlook for each APEC economy.

Outlook results are being disseminated to each economy during Roadshow events. APERC researchers have visited three-quarters of APEC economies since the report's release. The remaining economies will be visited by the end of 2019.

Preparation for the eighth edition Outlook is underway. Feedback from economies on scenarios, models, and data are contributing to the development. The eighth edition Outlook will utilise APEC energy data, instead of IEA, to underpin its analysis. Other improvements to the analysis include increasing the role of price in supply and demand decisions in the sector models.

MILESTONE

Scenario design for the 8th Edition is underway and will be shared for economy review by the end of 2019.

The eighth edition is planned for release in the first half of 2022 at EWG 63.

B. TOPICAL STUDIES

BACKGROUND

Along with the Outlook, 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 to provide useful information and insights to policymakers in the region.

PROGRESS

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 since 2017. The APERC Coal Report 2018 was published and will be presented at EWG58 in Antofagasta in October 2019. The report reviewed supply, demand, trade, and price developments over the past 10 years and projected developments over the next 5 years. Setting the coal market in a global context, the report also highlights the coal situation in particular APEC economies.

The other two publications are the APERC Oil Report 2018 and the APERC Gas Report 2018. They were presented at EWG57 in Manila in May 2019. The APERC Oil Report 2018 reviewed APEC oil demand and supply for the past 10 years and discussed the key factors that influence oil markets and trade in the next 5 years. The APERC Gas Report 2018 reviewed APEC natural gas demand and supply over the past 10 years with the projection of natural gas trade and price trends in the following 5 years. It included a case study on China's growing natural gas consumption and impacts on the Asia Pacific markets. The 2019 series of these three reports has already begun.

Apart from this series of reports, APERC also completed "*Challenges and perspectives on deployment of BEVs and FCEVs*". The study discusses the current situation of battery electric and fuel cell electric vehicles in the APEC region; the impact of BEVs and FCEVs on electricity supply, demand, and CO₂ emissions; and a comparative analysis of BEVs and FCEVs.

MILESTONE

Publication of the APERC Coal Report 2020, the APERC Oil Report 2020 and the APERC Gas Report 2019 will be in the first half of 2020

Challenges and perspectives on deployment of BEVs and FCEVs report to be published in September 2019.

C. 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, 18 editions have been issued up to 2019.

OBJECTIVE

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

PROGRESS

APERC starts preparation for APEC Overview 2019 in November 2019.

MILESTONE

APEC Energy Overview 2019 is expected to be published in June 2020.

D. 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 policy making 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 implementation of action plans could be improved with a view to achieving 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 in 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 for 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 were transportation and industry sectors. Six experts from Australia, Indonesia, Malaysia, Thailand, USA and International Energy Agency (IEA) joined the Follow-Up PREE Malaysia. The draft report was published on November 2018.

The 12th PREE, planned to take place in Russia (PREE Phase 8) was originally scheduled for October 2018. However, due to the restructuring of the federal government of Russia, it was cancelled. The latest of these peer reviews, 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 by six experts from five APEC economies (Hong Kong, China; Mexico; New Zealand; Thailand and 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 request of the Peruvian government. The Expert Team gave 47 preliminary recommendations on 6 subsectors. Around 40 participants and 26 presentations from 12 different relevant organisations. APERC drafted the Follow-Up PREE report and submitted it to the Peruvian government in September 2019.

MILESTONE

PREE Phase 10 is expected to be hosted by Indonesia in the second half of 2020.

2. ENERGY EFFICIENCY POLICY (EEP) WORKSHOP

OBJECTIVE

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

PROGRESS

A trial EEP Workshop in conjunction with EGEE&C45 in Singapore was held on 23 March 2015 as a Self-Funded project. The focus was on the fundamentals of energy efficiency policy making and the development of stable funding mechanisms for agencies and programmes.

The first EEP Workshop was held in conjunction with EGEE&C47 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 EGEE&C 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 EGEE&C51 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 EGEE&C53 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 representative. There were 41 participants from nine economies. A summary report was published on the APEC and APERC websites.

MILESTONE

APERC is in the early stages of soliciting suggestions for topics for the fifth EEP Workshop, which is planned to be held in conjunction with EGEE&C55 as part of PREE Phase 10.

E. 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 to develop 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 in APEC website as well as APERC website.

The sixth PRLCE for Papua New Guinea focused on hydropower resource 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.

MILESTONE

APERC will invite all eligible economies to host next PRLCE.

F. LOW-CARBON MODEL TOWN (LCMT) PROJECT

BACKGROUND

This project directly responds to the declaration at the ninth APEC Energy Ministers Meeting, held in Fukui, Japan on 19 June 2010.

Ministers discussed low-carbon paths to energy security, which provide cooperative energy solutions for a sustainable APEC as well as economic growth. They noted that the introduction of low-carbon

technologies in city planning to boost energy efficiency and reduce fossil energy use is vital to manage rapidly growing energy consumption in the urban areas of APEC.

APEC Energy Ministers therefore agreed to launch an ‘APEC Low-Carbon Model Town (LCMT) Project’ to present successful models for coordinated usage of advanced low-carbon technologies. This project is considered a priority project for APEC.

OBJECTIVE

The key objectives of LCMT are:

1. To disseminate the basic ideas and effective approaches of the Concept through utilising the LCT-I System, which helps evaluate the progress and status of low-carbon development of various areas in the APEC region;
2. To provide Feasibility Studies of a specified area of low-carbon development projects selected as the LCT-I volunteer towns in the LCMT Project Phase 7 and identify how to improve the low-carbon development plans through the Feasibility Studies; and
3. To share best practices and real-world experiences of low-carbon town design with planners and policymakers throughout the APEC region.

PROGRESS

LCMT Phase 1: Tianjin, China

Tianjin, China was selected as the case study for the LCMT Phase 1 Project. The feasibility study was conducted and completed by a private consulting company in November 2011.

The ‘Concept’ was completed by the Low-Carbon Model Town Task Force in October 2011.

The policy review for Tianjin, China was carried out on 30 August-1 September 2011.

LCMT Phase 2: Samui Island, Thailand

Samui Island, Thailand, was selected as the case for the LCMT Phase 2 Project.

The refinement of the ‘Concept’ was completed by Study Group-A, and assisted by APERC.

The feasibility study was carried out by qualified urban design consultants and a progress report was made at the LCMT Task Force meeting held in conjunction with the EWG44 meeting.

The policy review for Samui Island, Thailand was conducted by Study Group-B assisted by APERC on 24-28 September 2012.

LCMT Phase 3: Da Nang, Viet Nam

Da Nang, Viet Nam, was selected as the case for the LCMT Phase 3 Project.

The refinement of the ‘Concept’ was considered by Study Group-A and assisted by APERC, and its third Edition was completed in January 2014.

The feasibility study was carried out by qualified urban design consultants.

A policy review was conducted by Study Group-B and assisted by APERC on 4-6 December 2013. The policy review report was presented at the seventh LCMT Task Force meeting held in conjunction with the EWG47 meeting.

LCMT Phase 4: San Borja, Peru

San Borja, Peru, was selected as the case for the LCMT Phase 4 Project at the EWG46 meeting.

The refinement of the 'Concept' was considered by Study Group-A, assisted by APERC, and its fourth Edition was presented at the LCMT Task Force meeting held in conjunction with the EWG48 meeting. APEC Low-Carbon Town Indicator (LCT-I) System was drafted and presented at the said meeting too.

The feasibility study for the case of San Borja was carried out by qualified urban design consultants and the results was reported to the ninth LCMT Task Force meeting held in conjunction with the EWG49 meeting.

A policy review for San Borja was conducted by Study Group-B assisted by APERC on 19-21 January 2015. The policy review report was endorsed and published in January 2016 on the APERC website.

LCMT Phase5: Bitung City, Indonesia

Bitung, Indonesia was selected as the case for the LCMT Phase 5 Project at the EWG48 meeting.

The 'Concept' refinement was considered with a focus on Low-Carbon Measures. In order to finalise and create the guidelines for the LCT-I System, several trials including the previous LCMT case towns were conducted. The project also sought to incorporate the elements of the LCT-I System in the Indicators for City Services and Quality of Life discussed in the Working Group 2 of the Technical Committee 268 for Sustainable Development in Communities in International Organization for Standardization (ISO). The 5th Edition of the 'Concept' was presented at the 10th LCMT Task Force meeting held in conjunction with the EWG50 meeting.

The Feasibility Study for Bitung City, North Sulawesi Province, Indonesia was carried out by a qualified urban design consultant and reported to the 10th LCMT Task Force meeting.

A policy review was conducted by Study Group-B and assisted by APERC on 30 November -2 December 2015. The policy review report was endorsed and published in June 2016 on the APEC website as well as APERC website.

LCMT Phase 6: Mandaue City, the Philippines

Mandaue, the Philippines, was selected as the case for the LCMT Phase 6 at the EWG49 meeting.

The Feasibility Study for Mandaue City, the Philippines was carried out by a qualified urban design consultant and the report was published in June 2017 on the APEC website.

The first Edition of the LCT-I System was established together with the sixth Edition of the 'Concept'. The sixth Edition of the 'Concept' is the final edition for the time being and it was presented at the 12th LCMT Task Force meeting held in conjunction with the EWG52 meeting. The APEC liaison officer attended the ISO meetings to share information.

A policy review was conducted by Study Group-B and assisted by APERC on 7-9 December 2016. The policy review report was endorsed and published on the APEC and APERC websites in May 2017.

LCMT Phase 7: Krasnoyarsk City, Russia

Krasnoyarsk, Russia, was selected as the case for the LCMT Phase 7 at the EWG49 meeting.

The Feasibility Study for Krasnoyarsk City, Russia was conducted by a qualified urban design consultant and the report was endorsed by the EWG member in April 2018.

The first LCMT Symposium was held on 14-15 September 2017 in Jakarta, Indonesia for the dissemination of LCT through utilising the LCT-I System. The summary report was endorsed and published on the APEC and APERC websites in April 2018.

A policy review was conducted by Study Group-B and assisted by APERC on 5-7 December 2017. The policy review report was published on the APEC and APERC websites in October 2018.

The APEC liaison officer attended the ISO meetings to follow up the discussion for establishing the global standard.

LCMT Dissemination Phase 1 (Phase 8):

The feasibility studies on specific LCT-I System assessment items to be improved are underway for Banda Aceh in Indonesia, Shah Alam and Hang Tuah Jaya in Malaysia.

The second LCMT Symposium was held on 20-21 September 2018 in Da Nang, Viet Nam for the dissemination of LCT through utilising the LCT-I System.

Focused feasibility study for three volunteer towns of the Dissemination Phase 1 (Banda Aceh of Indonesia, Hang Tuah Jaya and Shah Alam of Malaysia) was led by Nikken Sekkei Research Institute and final report is going to be released soon.

The project was extended to March 2019.

MILESTONE

LCMT Dissemination Phase 2 (Phase 9):

The project proposal for LCMT Dissemination Phase 2 was approved in August 2018.

The third LCMT Symposium is to be held in San Borja, Lima, Peru on October 21-22, 2019.

The selected consulting agency is conducting feasibility study for two volunteer towns of the Dissemination Phase 2 (Davao of the Philippines and Da Lat of Viet Nam).

LCMT Dissemination Phase 3 (Phase 10):

The project proposal for LCMT Dissemination Phase 3 was submitted to project session 1, 2019 for the implementation of the project in 2019-2020, gone through Quality Assessment and is now waiting for Budget and Management Committee's approval. This phase is expected to be the last project of the LCMT Task Force, to conclude the 10 years of implementation. Dissemination Phase 3 will provide each of the three volunteer towns selected in the Dissemination Phase 2 (La Molina of Peru, Khon Kaen of Thailand and Phu Quoc of Viet Nam) a focused feasibility study; and hold a wrap-up symposium in late 2020 in Japan.

G. OIL & GAS SECURITY INITIATIVE (OGSI)

BACKGROUND

APEC Energy Ministers met in St. Petersburg, Russia on 24-25 June 2012, and 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 organised 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. 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 were 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 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, which focused on oil and gas supply emergency. 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. The 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 presented at the EWG 55 in Hong Kong, China. It was published in the APEC and APERC's website on July 2018. Finally, The Oil and Gas Security Exercise in Chile was held in Santiago on 13-15 March 2019. The OGSE in Chile was a 'blind' type exercise where participants were briefed about hypothetical oil and gas supply disruptions without prior notice. The goal was to simulate a possible emergency response with limited time and information. Seven experts from different institutions were invited to the OGSE to be part of the Review Expert Team

The OGS Newsletter, which is part of the Oil and Gas Security Network (OGSN), is being produced and has been circulated on bi-monthly since December 2014. To date, 29 OGS Newsletters have been released.

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 the APERC reported the implementation of OGSE in the Philippines, the results and progress of OGSS. Representatives from 19 APEC economies and 5 international and regional energy organisations 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 meeting on 9 March 2018. The fifth OGSN Forum was held in Sendai City, Japan, in April 10-12, 2019 in conjunction with the second EGCFE oil and gas meeting.

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 completed and 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.

MILESTONE

The OGSE in Chile report was drafted and submitted to the Chilean government, APERC is awaiting its endorsement. . The report will be published in EWG 58 under the OGSN framework.

The 5th OGSE is scheduled to be hosted by Thailand in the first half of 2020.

The OGS Newsletter will continue to be published every other month and the next issue is scheduled to be published by the end of October 2019.

Two OGSS projects: "*Small-scale LNG in Asia Pacific*" and "*Emerging energy security risks in changing energy landscape*" are published in September 2019. A new study has started since April 2019 entitled "*Changing LNG market dynamics – impacts on supply security in the APEC region*".

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

In FY2018, APERC experts were dispatched to Chinese Taipei on 13-17 August and into two seminars, in Indonesia—one from 19-23 March 2018 and another on 3-7 September 2018. The training in Chinese Taipei was in response to the request of EGNRET while the March training in Indonesia was a more intensive training on energy statistics and energy modelling for the Directorate General for Electricity of the Ministry of Energy and Mineral Resources (MEMR). Meanwhile, the September training was mostly on electricity modelling for the province of Sulawesi and the Centre for Data on Energy and Mineral Resources of MEMR. APERC experts were also dispatched to energy modelling training course in the Philippines held on 18-22 March 2019.

APERC established a cooperation course on ‘Energy Issues in Asia-Pacific Region’ at the Graduate School of Asia-Pacific Studies, Waseda University in 2016, in commemoration of the 20th anniversary of APERC. As a part of APERC's training activities, APERC will enhance ‘energy literacy’ of future leaders of Asia-Pacific region in general and invite candidates of energy experts to further energy studies particular, through this cooperation course. This is the fourth year in which APERC dispatches their researchers to give lectures to Waseda University graduate students.

MILESTONE

Dispatching of experts to other economies is scheduled for Indonesia (2-6 December 2019), the Philippines (January or February 2020) and Thailand (tentative in March 2020). Additional dispatch of experts to other economies will also be carried out depending on requests.

The seminar on energy modelling in Tokyo for the year 2019 will be held on 23-31 October 2019.

The cooperation course at Waseda University will continue for three more years from 2019 to 2021 based upon research results of the APEC Energy Demand and Supply Outlook 7th Edition. .

3. Building Energy Data Management Networks

BACKGROUND

APERC has built an online communication network with energy organisations 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 this 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. 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 an up-to-date and consistent APEC Energy Data Base, principally covering energy demand and supply data.
2. To develop an APEC energy data collection and dissemination network.
3. To be responsible for managing and reviewing the operation of the APEC Energy Data Base through data analysis and related economic analysis.
4. To collect policy relevant information.
5. To participate in “Joint Organisations Data Initiative”, as a joint activity of APEC, EUROSTAT, GECF, IEA, IEF, OLADE, OPEC and UNSD.
6. To implement energy statistics training courses.

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 2017 annual energy supply and demand data from the 21 member economies. The APEC Energy Statistics 2017 and APEC Energy Handbook 2017 will be published in October 2018.

On the sixth year of the EGEDA Training Program on Energy Statistics, APERC held the short-term course on 20-31 August 2018 while the middle-term course commenced on the same date and finished on 12 October 2018.

On the 6th year of the EGEDA Training Program on Energy Statistics, APERC held the short-term course on 19-30 August 2019 with eight participants from six APEC member economies. There were no nomination for the middle-term course.

The 17th APEC Workshop on Energy Statistics, a joint workshop with JODI was held in Tokyo on 11-13 June 2019. Participants were from 15 APEC members and JODI partners (IEA, IEF, GECF, OPEC, and UNSD). Generally, the objective of the joint workshop is to improve monthly oil and gas data. Specifically, following were the topics discussed:

- Importance of energy commodity data transparency
- Oil and gas flows and related statistics
- Data quality assessment
- Interaction with the oil and gas business sector
- Dealing with confidentiality

MILESTONE

APERC is currently verifying the collected 2017 annual energy supply and demand data and will publish the APEC Energy Statistics 2017 and APEC Energy Handbook 2017 in the second half of 2019.

The EGEDA Training Program on Energy Statistics will continue in 2020. The short-term course will be held tentatively in October 2020. The medium-term course will commence on the same date and hope to be completed on the second week of December 2020.

The 18th APEC Workshop on Energy Statistics will be held in June 2020. APERC is considering to focus the workshop on renewable energy statistics with the objective of improving data quality and accuracy and ultimately, to accurately track the progress of the APEC renewable share doubling goal.

II. FUTURE WORK PLAN

APERC's Future Work Plan is designed to assist EWG in responding to the instructions by APEC Energy Ministers for 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 executants, assists project overseers by carrying out APEC projects, on the condition that 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 Expert Group of Energy Data and Analysis (EGEDA) as well as other expert groups under EWG in planning and implementing its activities.

1. Activities to Support the Achievement of Energy Efficiency and Other Policy Objectives

A. APEC ENERGY DEMAND AND SUPPLY OUTLOOK

APERC will continue to disseminate the results of the Outlook seventh edition. Preparation of the eighth edition Outlook will contribute to ongoing techno-economic analysis of efficiency and intensity objectives.

B. TOPICAL STUDIES

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 eighth edition.

C. APEC ENERGY OVERVIEW

APEC Energy Overview 2019 to be published in June 2020.

D. PREE

APERC will hold the fifth Energy Efficiency Policy (EEP) Workshop in conjunction with EGEE&C55 as a part of PREE Phase 9.

Phase 10 of the project, Follow-up PREE in Indonesia is expected to be held in the second half of 2020.

E. PRLCE

The PRLCE will be a very important instrument to achieve the APEC aspirational goal to double the share of renewable energy in energy (or power) mix in the APEC region. APERC will invite all eligible economies to host next PRLCE.

F. LOW-CARBON MODEL TOWN (LCMT) PROJECT

The third LCMT Symposium is planned to be held in San Borja, Lima, Peru in 2019 as a part of the LCMT Dissemination Phase 2.

G. OIL & GAS SECURITY INITIATIVE (OGSI)

APERC will prepare for the 6th OGSN Forum in Japan, in 2020 and probably will be in conjunction with the EGCFE oil and gas meeting.

The 5th OGSE is scheduled to be hosted by Thailand in the first half of 2020.

APERC will continue activities for OGSI including issuing OGS Newsletter and publishing reports of OGSS.

2. Accepting Trainees and Dispatching Experts

Dispatching of experts in December 2019 is scheduled to be held in Indonesia; in January or February 2020 in the Philippines and tentatively in March 2020 in Thailand.

Organise the 25th Seminar on energy Demand and Supply Outlook on 23-31 October 2019 in Tokyo, Japan;

APERC will continue the cooperation course at Waseda University.

3. Building Energy Data Management Networks

The following are the plans for FY2019-2020:

1. Start the collection of the 2018 annual energy demand and supply data from December 2019;
2. Publish the APEC Energy Statistics 2017 and APEC Energy Handbook 2017;
3. Participate in international cooperation on energy statistics such as the Energy Statistics Development Group (ESDG) of IEA, JODI, International Energy Statistics (InterEnerStat) meetings, etc.; and
4. Run the EGEDA Training Program on Energy Statistics.
 - The short-term and middle-term training courses will be held in October 2020.

III. RESEARCH MANAGEMENT

1. APERC Annual Conference

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

The 2020 APERC Annual Conference is planned to take place in May 2020.

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 to facilitate the conduct of APERC's cooperative research. Its primary role is to give professional advice on APERC's on-going 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 Advisory Board Meeting was held on 16 May 2019 in conjunction with the APERC Annual Conference. The next Advisory Board Meeting is planned to take place in May 2020.

IV. APERC RESEARCH STAFF

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

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

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

As of 16 October 2019, APERC had a total of 21 research staff, of which 15 are Visiting Researchers from APEC economies.

Table 1: APERC Research Staff

Name
Kazutomo Irie (President)
James Michael Kendell (Senior Vice President)*
Munehisa Yamashiro (Vice President)
David Michael Wogan (Assistant Vice President)*
Edito Barcelona
Ruengsak Thitiratsakul*
Elvira Torres Gelindon
Gigih Udi Atmo*
Alexey Kabalinskiy*
Fang-Chia Lee*
Nguyen Linh Dan*
Diego Rivera Rivota*
Juan Ignacio Alarcon Marambio*
Hugh Marshall-Tate*
Christopher James Doleman*
Fifi Indarwati*
Zaharin Zulkifli*
Junseon Mun*
Victor Martinez Aranza*
Nobuhiro Sawamura
Takako Hannon

* 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
Revenue from:												
Japanese Government	374	626	681	729	619	634	594	547	525	528	498	446
Australian Government									8	8	8	
Total of Revenue	374	626	681	729	619	634	594	547	533	536	506	446
Expenses:												
Energy Efficiency/APEC Demand & Supply Outlook/ Related Research Programmes Oil & Gas Security	227	443	494	550	455	469	434	390	379	377	377	338
Energy Data Network & Know- How Transfer	147	183	187	179	164	165	160	157	154	159	129	108
Total of Expenses	374	626	681	729	619	634	594	547	533	536	506	446
Fiscal Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 (plan)
Revenue from:												
Japanese Government	447	418	409	425	494	580	657	653	689	672	672	672
Total of Revenue	447	418	409	425	494	580	657	653	689	672	672	672
Expenses:												
Energy Efficiency/APEC Demand & Supply Outlook/ Related Research Programmes Oil & Gas Security	339	318	315	308	325	325	432	501	522	423	388	423
Energy Data Network & Know- How Transfer	107	100	94	94	86	68	107	68	183	124	161	119
							100	97	91	86	73	86
Total of Expenses	447	418	409	402	411	500	600	781	737	670	580	672

VI. LEGAL STATUS OF APERC

1. Current Legal Status of APERC

APERC was created in 1996. At that time, Japan's laws were strict on establishment of incorporated foundations, such as securing a substantial basic fund.

So it was very difficult for APERC to be established as an independent incorporated foundation at that time.

Therefore, APERC was established as an affiliate to the Institute of Energy Economics, Japan (IEEJ) which already existed as one of the incorporated foundations.

2. Future Legal Status of APERC (Planned)

However, Japan's laws on incorporated foundations were largely relaxed in 2008. With a small initial fund, a non-profit organisation can become an incorporated foundation.

Considering such changes, APERC decided to become independent from IEEJ by establishing new incorporated foundation.

Legally speaking, IEEJ established a new incorporated foundation, "APERC", and will transfer its APERC activities to the new foundation on April 1, 2020, if the Japanese Government approves the transfer.

Revision of the Terms of Reference (TOR) of APERC will be proposed when the Japanese Government approves the above-mentioned transfer.