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

35th Meeting
Tokyo, Japan
12-15 October 2010

Introduction

The 35th meeting of the Expert Group on New and Renewable Energy Technologies was held on October 12-15, 2010 in Tokyo, Japan. This meeting was held alongside a one day workshop for the EGNRET project “Addressing Grid-interconnection Issues in Order to Maximize the Utilization of New and Renewable Energy Resources” (EWG 02/2009) on October 12, 2010. The purpose of the workshop was to review the draft final report and provide feedback to the project developers.

The EGNRET 35 meeting was co-chaired by Dr. Cary Bloyd of the U.S. Department of Energy’s Pacific Northwest National Laboratory and Mr. Kazuaki Koizawa, Special Advisor on International Affairs, Energy Conservation & Renewable Energy Department, Agency for Natural Resources & Energy at Ministry of Economy, Trade and Industry (METI), Japan. Representatives from Indonesia, Japan, Korea, Malaysia, New Zealand, Singapore, Chinese Taipei, Thailand, the United States of America, APERC and APEC Energy Business Network participated in the meeting.

Dr. Bloyd welcomed the delegates and opened the meeting. Mr. Koizawa then gave an official welcome to the delegates on behalf of Japan. Following the welcome, a final agenda distributed by the Chair was reviewed and accepted. The delegates were also informed that there would be a site tour on October 15, 2010 hosted by Japan. All delegates were invited to visit the Panasonic Center Tokyo and the Toshiba Corporation to share the Japanese green innovation experiences.

Overview of New and Renewable Energy in Japan

Mr. Yoji Matsui, the Deputy Director of New and Renewable Energy Division Agency for Natural Resources and Energy at Ministry of Economy, Trade and Industry gave a detailed overview of Japanese Policy on New Energy. Mr. Matsui’s presentation reviewed the current renewable energy utilization in Japan, Japanese policy on renewable energy (including support to local governments, R&D Projects, and measures for deployment), and policy on new usage of energy & new technology (including energy management system and storage battery).

Currently, cumulative installation of photovoltaic in Japan ranks at 3rd in the world with a capacity of 2.1 GW in 2008, and the world market share ranks at 2nd. Meanwhile, the cumulative installation of wind power in Japan ranks at 13th in the world with a capacity of 1.8 GW in 2008, but the installation pace has come down, because of the restriction of locations, etc. The wind turbine market share of Japanese leading company Mitsubishi Heavy Industries, Ltd. (MHI) is 2% in the

world. The Japanese government sets a target of renewable energy comprising 10% of primary energy supply by 2020.

Mr. Matsui also mentioned that the barriers of renewable deployment include climate condition, geometrical restriction, high cost, instability and influence on distribution systems, and global competition. Therefore, the measures on renewables will become necessary. For example, the cost for installing photovoltaic system is still expensive. The cost for local environmental protections is also increasing recently. Thus, the cost reduction by R&D and the demand expansion is expected. The prediction of PV cost reduction scenario by R&D is expected from 46 yen/kWh in 2004 to 14 yen/kWh in 2020. Incentives including subsidies and taxations are also important measures for deployment of renewables in Japan. METI prepares various incentives for installation. The photovoltaic subsidy for residence is 70,000 yen/kW (system under 650,000 yen/kW), and fuel cell is 1.3 million yen for 1 unit. For institution, all the new energies subsidy for non profit bodies is a half of installation cost; for companies is 1/3 of installation cost. To expand the demand, the RPS (Renewables Portfolio Standards) Act requires that electric utilities have to use electricity generated from renewable energies. Moreover, the Excess Electricity Purchasing Scheme for PV started last November, and enlargement of the scheme is under consideration. In addition, for energy management in Japan, the cost to stabilize grids is estimated 0.14 - 5.7 billion yen by 2020. PV output control, EV charge and heat pumps will be able to reduce the cost (i.e., the volume of storage batteries).

Mr. Matsui finally pointed out that the policies on storage batteries in Japan include international competition and collaboration, cost reduction, performance improvement (incl. R&D, standardization, and demand expansion). Currently, Japanese manufactures have large share in the market of various batteries including those used for hybrid vehicle. Meanwhile, Korean and Chinese manufactures are also increasing their sales volume. Although, the reduction of the cost and improvement of the performance is very important, the cost reduction of the battery is becoming difficult. Therefore the deployment of EV has plateaued from 2005 to 2008 in Japan, while the sales of hybrid vehicles are rapidly increasing. Nevertheless, the boom of EV seems to be inevitable in the near future. In this regard, Government of Japan has strongly supported EV expecting a real commercial chance. Especially, because R&D for innovative technologies for the storage batteries is essential for EV, research has been conducted under the collaboration between industries and universities since 2009.

Mr. Matsui's detailed presentation is available on the EGNRET website at:
<http://www.egnret.ewg.apec.org/meetings/engret35/index.html>

Program Overview and Recent APEC Activities

The Chair reviewed the agenda and briefed the participants on the recent activities and developments that occurred after the last meeting of the EGNRET on 26-28 April, 2010 in Kuala Lumpur, Malaysia.

The EWG has not met since EGNRET 34. The EWG 40 is scheduled to be held in Brunei-Darussalam on November 22-26, 2010.

The 9th Energy Ministerial Meeting (EMM 9) was held in Fukui, Japan on June 19-20, 2010. The theme of EMM 9 was “Low Carbon Paths to Energy Security – Cooperative Solutions for a Sustainable APEC.” The meeting’s purpose was to discuss energy security, energy policy to use limited resources effectively and in a green manner, and encourage adoption of low-carbon emissions energy production. APEC's Energy Ministers issued the Fukui Declaration with directions to advance energy security, improve energy efficiency and increase the clean energy supply in the APEC region.

In the Fukui Declaration, tasks relating to new and renewable energy issues on energy security and efficiency have been assigned to EWG including: to continue assessing the resource potential for biofuels to displace petroleum based fuels, the relative costs of biofuels, sustainable development practices for biofuels and strategies for expanding biofuels infrastructure, in cooperation with the Automotive Dialogue and the Transportation Working Group (TWG); to conduct a series of workshops on the potential fuel and carbon savings from electrification of the transport sector, energy efficient freight, transit-oriented development and other energy efficient transport strategies, in cooperation with the TWG.

Tasks on clean energy supply have been assigned to EWG including: 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; continue its assessment of renewable energy options for reducing carbon emissions, spurring investment and creating new jobs, in cooperation with EGNRET and the Small and Medium Enterprises (SME) Working Group; to start an APEC Smart Grid Initiative (ASGI) to evaluate the potential of smart grids to support the integration of intermittent renewable energies and energy management approaches in buildings and industry; to develop APEC Technology Development Roadmaps for key energy technologies; and to establish a Task Force to implement an APEC Low-Carbon Model Town Project.

Ministers have further instructed the EWG to recommend a larger energy intensity reduction target for the APEC region, given that the goal set in 2007 of a 25 percent reduction by 2030 is likely to be far surpassed.

The full text of the Fukui Declaration on Low Carbon Paths to Energy Security: Cooperative Energy Solutions for a Sustainable APEC issued at the conclusion of EMM 9 may be accessed at:

http://www.apec.org/apec/ministerial_statements/sectoral_ministerial/energy/2010_energy.html

Also, the EMM9 website has been finalized at:

<http://www.enecho.meti.go.jp/policy/apecenergy/index.html>

Overview of APERC Activities

APERC president Mr. Kenji Kobayashi presented a detailed review of APERC activities. The review included publication of 4th Edition of APEC Energy Demand and Supply Outlook, progress on Peer Review on Energy Efficiency (PREE) and

Cooperative Energy Efficiency Design for Sustainability (CEEDS), preparation of 5th Edition of APEC Energy Demand and Supply Outlook, and peer review on policies to promote low-carbon energy.

The fourth edition of APEC Energy Demand and Supply Outlook was released in November, 2009. The report concluded that 25% minimum APEC energy intensity reduction goal (2005-2030) will be met under business-as-usual baseline. However, the baseline of business-as-usual is unsustainable because of growing oil imports and greenhouse gas emissions. The activities of the Peer Review on Energy Efficiency (PREE) have been conducted well. In 2009, the first four PREEs for New Zealand, Chile, Viet Nam and Thailand were undertaken with reports published on the APERC website (<http://www.ieej.or.jp/aperc>). In early 2010, the PREE for Chinese Taipei was conducted, then followed by PREEs for Peru and Malaysia to be completed by early December 2010.

Based on the APEC Energy Ministers' Fukui Declaration, EWG will carry out the assessment of the potential for reducing the energy intensity of economic output in APEC economies between 2005 and 2030, beyond the 25 percent aspirational goal already agreed by the APEC Leaders, with assistance from APERC, EGEDA and EGEEC. Therefore, APERC will assess an alternative scenario focusing on sustainable energy future. The 5th Edition of APEC Energy Demand and Supply Outlook will be prepared soon.

Mr. Kenji Kobayashi also mentioned that APERC will analyze effective and efficient policies to promote low-carbon energy (renewables) in the APEC region through a peer review mechanism known as the Peer Review on Renewable Energy (PRRE). The objectives are to enable APEC economies to improve the effectiveness of their policies, goals and action plans in promoting low-carbon energy (e.g. renewables) through a peer review mechanism, to encourage APEC economies in setting RE goals and formulating action plans to achieve the goals, and to share experience on RE performance, policy measures and actions in promoting RE and broadening the network among member economies. Exploring how government policies can accelerate the development and implementation of potential low-carbon energy supplies e.g., renewables investments, is the aim of the peer review mechanism as well.

The activities of peer review on policies to promote low-carbon energy supply include

1. Invite APEC economy to voluntarily host the Peer Review;
2. Define scope of review;
3. Review team establishment – set up APEC expert team;
4. Prepare background information on RE policies of the host economy;
5. Review team visit;
6. Draft review report with recommendations.

The expected outcomes are development of a review report and endorsement of the report with recommendations at an EWG meeting. Also the report will be published on the APERC website (<http://www.ieej.or.jp/aperc>).

The PRRE project includes the definition of low-carbon energy and EGNRET will

support APERC on the implementation of PRRE.

Low-Carbon Model Town (LCMT) Project Overview

Following APERC's presentation, Mr. Shinji Kakuno, Director for Natural Resources and Energy Research, Agency for Natural Resources and Energy, METI gave an introduction to the APEC Low-Carbon Model Town (LCMT) Project. According to the Fukui Declaration at EMM 9, introducing low-carbon technologies in city' planning is essential to responding to increasing energy consumption in urban areas. A Low-Carbon Model Town Project then was launched to present "successful models for coordinated usage" of the advanced technologies. The model cities would feature a smart grid advanced power transmission network or buildings with facilities for renewable energy generation.

Mr. Kakuno said the Low-Carbon Model Town Project aims to introduce low-carbon technology at the level of society and not that of individual products. Over the next three years, APEC will select between 10 to 20 locations and conduct feasibility study projects to transform these cities into low-carbon cities. The concept of the low-carbon town is to develop the urban area with introduction of certain measures for improving energy efficiency and introduction of low-carbon energy with consistency through the "planning", "developing", and "operational" phases. The procedures of the projects include creating the concept for the "Low-Carbon Town", implementing the feasibility studies of adopting the "Low-Carbon Town Concept" for the existing urban city/town development plan, and sharing the information gained from case studies.

Mr. Kakuno mentioned that the Yujiapu Center Business District in Tianjin City, a northeastern city in China, may be the first city picked for the pilot project for feasibility studies as early as 2011. The presentation including the detailed information about the LCMT project with the implementation scheme is available on the EGNRET Web site at:

<http://www.egnret.ewg.apec.org/meetings/engret35/index.html>

Member Economy Presentations: Current Low-Carbon Town Activities in APEC Member Economies

The economy presentation topic for EGNRET 35 was "Current Low-Carbon Town Activities in APEC Member Economies." This topic was chosen because APEC Energy Ministers at EMM9 have agreed to launch a Low-Carbon Model Town Project (LCMT) proposed by Japan, and instructed the EWG to establish a new Task Force. APEC member economies can share their experiences in developing low-carbon town, and provide the information to the project developers. The meeting presentations are available on the website at:

<http://www.egnret.ewg.apec.org/meetings/engret35/index.html>

EGNRET Current Project Update

The EGNRET is currently implementing two projects, as described below.

Addressing Grid-interconnection Issues in Order to Maximize the Utilization of

New and Renewable Energy Sources (EWG 02/2009)

This Japan-led project is examining grid-interconnection issues associated with large penetration levels of renewable energy. However, power output from new and renewable energy power sources like solar photovoltaics and wind turbines fluctuates depending on environmental conditions. When these new and renewable energy sources are connected to power grids, these fluctuations can negatively affect power grid frequencies, voltages, and harmonics. Because of this, power utility companies often limit the amount of new and renewable energy that can be grid-interconnected. The aim of this project is to identify and summarize research that is being undertaken or solutions that have already been identified regarding issues that limit the amount of new and renewable energy that can be grid-interconnected, including a focus on energy storage solutions.

A draft report was issued to characterize the main issues with the integration of stochastic and only partially predictable renewable energy technologies into distribution networks, i.e., distributed generation (DG). It summarizes the approaches currently being used to address them, including research and development activities. It then identifies best practices in addressing these issues, including non-technical approaches. Also it outlines future research and development activities that may be required to fully integrate distributed generation into electricity networks of the 21st century. Finally it discusses the factors that influence the potential for applying best practices throughout the APEC region.

As mentioned above, a one day workshop for the project was held with this meeting on October 12, 2010 to review the draft final report and provide feedback to the project developers. The draft report and workshop presentations are available on the workshop's website at:

<http://www.egnret.ewg.apec.org/workshops/Grid-interconnection/index.html>

This Japan-led project is on schedule and is expected to be completed in 2010.

Using Smart Grids to Enhance the Use of Energy Efficiency and Renewable Energy Technologies (EWG 01/2009S)

This US self-funded project will examine the status and potential within APEC economies of smart grid technologies to enhance the use of renewable energy and energy efficient buildings, appliances and equipment. Smart grids integrate technologies to improve the management of the grid itself, energy efficiency and renewable energy technologies “behind the customer meter” (including “smart buildings”), and intelligent controls to link the grid with customers in a more efficient and seamless fashion. The report will focus on APEC economies and include a survey of how smart grid technologies and practices have been used to enable new products and services, optimize the use of power grids, allow greater use of renewable energy options, and encourage a greater demand-side efficiency response in APEC economies.

A detailed survey was sent out and the results are being analyzed. A follow-up workshop will take place to examine the findings of the study and lay a path forward for future progress in these areas. The project is on schedule, and should

be completed by March 2011.

Review of APEC Project Proposal Process

The Chair emphasized again that project proposals had changed since 2010. The BMC has will follow the new project approach for used in all three sessions in 2011. EWG will rank projects proposals at both the second meeting of 2010 (i.e., EWG 40) and both meetings in 2011. Thus, for the first 2011 session, concept notes should be submitted to the EWG Secretariat by October 25, 2010.

For Session 1, 2011, the process is outlined below:

1. Propose concept at EGNRET meeting.
2. Develop two-three page Concept Note for submission to EWG for ranking by October 25, 2010.
3. EWG ranks the projects and submits the concept note to the APEC Secretariat.
4. EWG Secretariat uploads the concept note.
5. The concept notes are ranked from 1 to 4 (takes 3 weeks).
6. Full project proposals and QAFs are developed for top ranked projects; Secretariat will work with developers who have high priority ranked proposals but low quality.
7. When satisfactory quality is reached, the Secretariat will recommend that the project commence.
8. Proponents have until the next project approval session deadline to submit proposals.

All EGNRET projects will still need to be ranked by the EWG. Thus, first session 2011 project proposals will need to be submitted at EWG 40 by October 25, 2010. Once ranked by the EWG, the projects may be submitted to any of the three 2011 funding sessions. Additional information about the project proposal process 2011 will be provided by the Chair prior to EGNRET 36.

EGNRET New Project Proposals for Funding in 2011

Ten new project proposals for funding in 2011 were presented and endorsed by all delegates after discussion. Therefore, all project leaders should develop a 2-3 page Concept Note, and send to the Chair of the EGNRET by October 25, 2010 before submission to EWG 40 for ranking.

Below is the list of new project proposals:

1. APEC 21st Century Renewable Energy Development Initiative (Collaborative IX): Potential for Biomass-to-Liquids (BTL) Production and Trading throughout the APEC Region (New Zealand lead). This project will be submitted jointly with the Biofuel Task Force.
2. APEC 21st Century Renewable Energy Development Initiative (Collaborative VI): Electricity Trading and Market Solutions to grid integration of Renewable Energy in APEC (New Zealand lead).
3. APEC 21st Century Renewable Energy Development Initiative (Collaborative VI): Guidelines for the Implementation of Wind Power in APEC (New

Zealand lead).

4. APEC 21st Century Renewable Energy Development Initiative (Collaborative IX): The Status and Potential of Electric Vehicles in the APEC Region (New Zealand lead).
5. APEC 21st Century Renewable Energy Development Initiative (Collaborative IX): Natural Gas Vehicle Safety in APEC economies (New Zealand lead). This project proposal will consult with Transportation Working Group before submission.
6. APEC 21st Century Renewable Energy Development Initiative (Collaborative VI): Workshop on the Status and Opportunities for Marine Energy Development in APEC Economies (New Zealand lead).
7. APEC SME Renewable Energy Infrastructure Blueprint: Report on Economic Benefits (USA lead \$120,000 total/\$80,000 APEC). This project was submitted jointly with the APEC Small and Medium Enterprises (SME) Working Group.
8. Best Practices in Energy Efficiency and Renewable Energy Technologies in the Industrial Sector in APEC Region (Thailand lead, \$75, 000 total/\$50,000 APEC). This project was submitted jointly with the APEC Expert Group on Energy Efficiency and Conservation (EGEEC).
9. Addressing Challenges of AMI Deployment in Order to Enable Smart Grid Applications (Chinese Taipei lead).
10. 2011 APEC Conference on PV Policy and System Development (Chinese Taipei lead, Self funded).

Election of Chair and Vice-Chair

The elections were held for the positions of Chair and Vice-Chair for the next two years. Chinese Taipei had provided the current Chair with its nomination for Chair prior to EGNRET 35. After a brief discussion, the approval of Chinese Taipei as Chair was then approved by consensus.

The Chair then asked for nominations for Vice-Chair. It was stated that the role of the Vice-Chair would be to Chair the meeting in the event that the current Chair could not attend. The delegate from Japan said Japan was interested in serving as Vice-Chair. After a brief discussion, Japan was elected to serve a two year term as Vice-Chair.

Administration and Operation

The next EGNRET meeting was discussed and USA will host EGNRET 36 in Washington DC, on the margins of SOM1 which is scheduled for February 28 - March 13, 2011. The meeting will include a joint session with the Expert Group on Energy Efficiency and Conservation and possibly a project workshop. The Chair

asked if there was any additional new business, there being none, the Chair and EGNRET members thanked Japan for hosting the meeting and closed the 35th meeting of the APEC Expert Group on New and Renewable Energy Technologies. Meeting minutes will be distributed and approved out of session.

LIST OF PARTICIPANTS

Indonesia

Andi Novianto, Ministry for Economic Affairs

Japan

Kosuge Toshio, Ministry of Economy Trade and Industry (METI)
Kazuaki Koizawa, Ministry of Economy Trade and Industry (METI)
Yoji Matsui, Ministry of Economy Trade and Industry (METI)
Mie Okada, Ministry of Economy Trade and Industry (METI)
Reiko Eda, Ministry of Economy Trade and Industry (METI)
Shinji Kakuno, Ministry of Economy Trade and Industry (METI)
Ken Johnson, New Energy & Industrial Tech Development Organization (NEDO)
Yoshiaki Shibata, Institute of Energy Economics (IEE)
Kan Sichao, Institute of Energy Economics (IEE)
Takao Ikeda, Institute of Energy Economics (IEE)

Korea

Dae Kyeong Kim, Korea Electrotechnology Research Institute (KERI)

Malaysia

Muhammad Sharul Azam Abdul Rahim, Energy Commission

New Zealand

Nathan Ross, Energy Efficiency & Conservation Authority (EECA)

Singapore

Faith Gan, Energy Market Authority
Agnes Koh Shi Min, Energy Market Authority

Chinese Taipei

Huang Yu-Chin, Bureau of Energy, Ministry of Economic Affairs
Hom-Ti (Thomas) Lee, Industrial Technology Research Institute (ITRI)
Yi-Shuo Huang, Industrial Technology Research Institute (ITRI)

Thailand

Sukamon Prakobchat, Ministry of Energy
Sukanya Limpiyapirom, Ministry of Energy
Paritud Bhandhubanyong, Technology Promotion Association

USA

Cary N. Bloyd, Pacific Northwest National Laboratory (PNNL)

APERC

Kenji Kobayashi

Ralph D. Samuelson
Yi-Hsieh Huang
Satoshi Nakanishi
Weerawat Chantanakome
Goichi Komori

APEC Energy Business Network

David F. S. Natusch, Resource Development, Ltd.