

EXPERT GROUP ON CLEAN FOSSIL ENERGY (EGCFE) PROGRESS REPORT TO THE 51st MEETING OF THE APEC ENERGY WORKING GROUP (EWG 51)

A summary of administrative and project activities undertaken by the EGCFE since the EWG 49 Meeting is provided by the EGCFE Chair, Mr. Scott Smouse (USA).

ADMINISTRATIVE

The EGCFE's web site <www.egcfe.ewg.apec.org> is maintained by USDOE's National Energy Technology Laboratory (NETL). A major review of the website was completed in mid-2015 with the aim to revamp the site by year's end. However, following relocation of the EGCFE Chair from NETL to DOE HQ, the update has been delayed until adequate resources are secured.

EGCFE Secretariat

Ms. Toshiko Fujita of JCOAL-JAPAC is the EGCFE Secretariat.

Support Contractor

Technical support to the EGCFE Chair is provided by Dr. Ian Torrens (USA) through a USDOE site-support contract, for preparation of APEC project concept notes, full project proposals, project monitoring and completion reports, EGCFE progress reports to the EWG, development of technical programs for EGCFE seminars and workshops, and other ad hoc tasks related to EGCFE and EWG activities as required.

Planning Activities

EGCFE business meetings are typically held in conjunction with the annual Clean Fossil Energy Technology and Policy Seminar. The last meeting was held on 21 February 2012 in Gold Coast, Australia. However, owing to travel limitations by the EGCFE Chair, the annual EGCFE seminar and associated business meeting were not held in 2013 and 2014. The next business/planning meeting will be held in conjunction with the next annual Seminar, which is has been proposed for May 2016 in Kuala Lumpur, pending approval of the Malaysian government.

EGCFE Vice Chair

Since the retirement of Mr. Frank Mourits of Canada, several years ago, the EGCFE has not had a Vice Chair. It was planned to hold discussion on his replacement during the EGCFE Business Meeting planned to be held with the next EGCFE Technical and Policy Seminar. However, since this seminar has been postponed, this discussion has not occurred. Therefore, the Chair initiated discussions with Japan, serving as the EGCFE Secretariat and major EGCFE supporter, on the process to communicate this need to the EGCFE members. Further discussions are planned to nominate and confirm a EGCFE Vice Chair in the next few months.

PROJECT STATUS

(1) Coal-Based Power Generation and Conversion - Saving Water (EWG 08 2014A)

Most energy production and conversion methods need large amounts of water, and most methods of producing fresh water require energy. Policy-makers need to understand the links and trade-offs between water and energy, termed the nexus. Under this project, information will be collected and shared on developments to make coal-based energy generation more efficient and less water-intensive, on recovery and reuse of water from coal-based energy production, and on policy and regulatory developments in APEC member economies related to the water-energy nexus for coal-based energy production.

The project is being carried out by Det Norske Veritas (DNV-GL) of Singapore, which was competitively selected from six contractor proposals received in response to an APEC RFP. The end product will be a report containing information on the latest developments to make coal-based energy systems, including power generation and production of SNG and chemicals, more efficient and less water-intensive. The report will describe the nature and magnitude of the water-energy nexus, drawing from practical examples in regions where water is scarce, and highlight the technical, economic and institutional issues faced by power generation in such regions. A number of case studies will describe how specific power generating plants in arid regions manage their water needs. The report will synthesize information from these case studies and other recent sources, to summarize the latest developments for recovery and reuse of water from coal-based energy production, including use of alternative sources of water and coproduction of water with carbon capture, utilization and storage. Policy and regulatory developments related to the water-energy nexus will be highlighted.

A draft initial report, with introductory material and a case study, has been received and is being reviewed by the United States and China. Information for several case studies of water-saving technologies and best practices in Chinese coal-fired power plants have been received from the Thermal Power Research Institute (TPRI) for inclusion in the report.

(2) APEC Water-Energy Nexus Expert Workshop (EWG 07 2015A)

This expert workshop will build on information generated and lessons learned in the water-energy nexus project described above. The objectives will be:

- To discuss and evaluate the priorities identified in EWG 08 2014A project findings, and to share up-to-date knowledge and experience.
- To discuss future work in this area and develop recommendations, including capacity building needed on technologies, on the economics of measures addressing water-energy nexus issues, and on needed policy/regulatory structures.

The target speakers and audience are expected to include:

- Key government officials at the policy level, with relevant technical and economic expertise, which are involved in decision-making on freshwater resources management (production, transportation, and distribution), particularly with regard to the use of water for fossil energy-based industry; and on the environmental and regulatory issues specific to the water-energy nexus.
- Institutes and academia involved in economic and policy analysis in this area, such as the [World Resources Institute](#), the [World Policy Institute](#), the [Pacific Institute](#), and the Schlumberger [SBC Energy Institute](#).
- Representatives of relevant industry sectors with interests in this topic.
- Other international fora active in this topic area (e.g., IEA/OECD, UNESCO).

The workshop structure, content and selection of speakers will reflect a special focus on the needs of developing economies.

The project will be conducted by a consultant, who will be responsible for suggesting an appropriate APEC host economy and workshop location, developing the workshop program, organizing the event, and preparing a report on the workshop for publication by APEC. The report will summarize the workshop, including presentations, briefing papers, and other relevant information. It will contain suggestions for follow-on work by APEC on water-energy nexus issues, formulated with input from the workshop participants.

Close coordination between this project and the above water-energy nexus project will aid in identifying invited speakers who are not only knowledgeable in this field of activity, but also capable of identifying critical future directions of research and analyses needed within the APEC region on the water-energy nexus field of activities from technology through policy to regulations.

It was at first felt that cost savings and efficiencies could be achieved if the same contractor DNV-GL were to carry out the workshop project, and there were discussions with the APEC Secretariat regarding the rules for selection of this contractor. However, DNV-GL declined to be a candidate, mainly on the basis that workshop organization was not an area to which it was keen to allocate resources.

Subsequently, a Request for Proposals (RFP) has been drafted for posting to the APEC website to seek interest from other contractors. A request to extend the project from the end of 2016 to the first half of 2017 is being prepared and will be submitted soon.

(3) Roadmap to Promote Transfer and Dissemination of Clean Coal Technologies in APEC Region (EWG 08 2015A)

Fossil fuels, especially coal, will continue to play significant roles in the energy mix of Asia-Pacific region in long term. This project responds to APEC Energy Ministers' instruction for the EWG (through their 2014 Beijing Declaration) to promote clean coal technologies (CCTs), so as to enhance cooperation in developing and applying CCTs and to ensure sustainable energy development in APEC region.

This project will build a CCTs database through information collection and field survey work, providing a technology category list and priority technical review. This project will hold periodical seminars, where experts can share their up-to-date information and best practices on CCTs, provide recommendations on promoting technology transfer and dissemination, making all partners clear about the significance and prospects of CCTs. A final workshop will be held in China in late 2016 to assess implementation plans and development strategies of CCTs deployment in some economies. A detailed summary report will be submitted.

The objectives are:

- To create a platform for all APEC economies to participate in the activities of CCTs, and to build a CCTs database providing a technology category list and priority technical review.
- To develop and provide recommendations on promoting technology transfer and dissemination of CCTs.
- To emphasize to selected partner beneficiaries clear the significance and prospects of CCTs and to enhance common understanding among APEC economies on development of Low Carbon Technology.

The anticipated project outputs are:

- A CCT database, including high-efficiency USC and IGCC technologies, along with CCUS and utilization of coal-based syngas, as well as control of emissions of particulates, sulphur and nitrogen oxides, and mercury.
- A list of key stakeholders and beneficiaries in all relevant APEC economies.
- A website (www.apec-cct.com) that includes programs significance, government attitudes and support for CCTs by environmental groups. The APEC CCT working group's project plan, detailed schedules, survey results, and the development plan will be uploaded to the website. Three seminars and three videoconferences will be held and the results uploaded to the website.
- A workshop, which will review technical details on the range of available CCTs.

The final project report will summarize capture from the website content and workshop results aimed at encouraging development and deployment of CCTs in APEC member economies and non-member economies. Professor Xinbin Ma, Dean of the School of Chemical Engineering & Technology of Tianjin University – the largest Chemical Engineering school in China, is managing the project.

This project contributes to the accelerating establishment of an APEC Sustainable Energy Center (APSEC) to adopt an open and forward-looking perspective for enhancing cooperation among member economies; getting a deeper understanding of their research and development (R&D) needs; building information platforms; developing Asia Pacific intellectual networks; sharing R&D results and strengthening practical project cooperation.

NEW PROPOSALS

The EGCFE submitted one concept note for Session #1 funding consideration. This concept, Best Practice Guidance for Effective Coal Bed Methane Recovery Technologies, was submitted by the China Coal Information Institute. As an unconventional natural gas, the total technically recoverable CBM in all APEC economies has been estimated at 28,700 BCM. Some APEC developing economies, like Indonesia, Vietnam, and Mexico, have rich CBM reserves. But owing to the lack of appropriate recovery technology, their utilization of this energy resource remains low. Some APEC economies, such as Australia, Canada, China, and the United States, have developed and matured advanced technologies for CBM production. In initial stage of this project, the project team will prepare a desk review of the technical characteristics of available advanced CBM recovery technologies, collect information on potential coal blocks for development, and conduct site visits to developing economies. Then, the project team will consult experts to analyze the applicability of various recovery technologies for different geological conditions, such as coal seam gas content, coal permeability, etc. Finally, a report will be compiled with recovery technology selection guidance for developing APEC economies for specific geological conditions of CBM reserves. An international conference will be held in Beijing at the end of the project as a platform for CBM technology information sharing, expert networking, and business cooperation.

The EGCFE is actively developing several new concepts for submission to APEC for Session #2 funding consideration, including follow-on work on carbon capture, utilization, and storage capacity building, unconventional gas census, clean coal technologies, and the Clean Fossil Energy Technical and Policy Seminar.

EGCFE CLEAN FOSSIL ENERGY TECHNICAL AND POLICY SEMINAR

The next annual EGCFE Seminar and business meeting have been proposed for Kuala Lumpur, Malaysia, is being discussed with the Ministry of Energy, Green Technology and Water. Chinese Taipei has also expressed interest in hosting the following Seminar. The Japan Coal Energy Center is leading these discussions for the EGCFE.