APEC Peer Review on Energy Efficiency in Chinese Taipei

APEC EWG40 – 22-26 November 2010
Brunei Darussalam

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Asia-Pacific
Economic Cooperation

Outline

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- Energy Efficiency in Chinese Taipei
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- Summary

Review Team

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- **Mr Higinio Acoltzi ACOLTZI, Researcher, Electrical Research Institute, Mexico.**
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- **Mr George SUN, Deputy Director, Research and Statistics, Land Transport Authority, Singapore.**
- **Mr Brian CASTELLI, Executive Vice President, Programs and Development, Alliance to Save Energy, United States.**
- **Mr Yi-Hsieh HUANG, Team Leader, Asia Pacific Energy Research Centre, Japan (APERC).**
- **Ms Kate PENNEY, Researcher, Asia Pacific Energy Research Centre, Japan (APERC).**

PREE Activities in Chinese Taipei

Monday 23 August

- An Overview of National Energy Policy
  - Institutional Framework; Sustainable Energy Policy and Measures; Programs
- Energy Statistics and Monitoring
  - Processing of Energy Statistics; Energy Supply and Consumption Trends; Energy Planning Model
- Overview of the Energy Efficiency Management Program
  - Energy Conservation Policy and Strategy; Action Plans; Major Programs; Achievements; Future Plans

PREE Activities in Chinese Taipei

- Energy Management, Audit and Service
  - Legislative and Regulatory Framework; Energy Audit Mechanism; Training Program; Achievements; Future Plans
- Equipment Energy Efficiency Management and Promotion
  - Key Strategies of the Energy Conservation Plan; Implementation; Achievements; Future Plans

Tuesday 24 August

- Technology R&D for Energy Conservation
  - Technology Development Strategy; Achievements; Green Energy Industry in Chinese Taipei; Technology Promotion and Application; Future Plans

PREE Activities in Chinese Taipei

- Electrical Power in Chinese Taipei
  - Power Demand and Supply; Upgrading Efficiency of Existing Thermal and Nuclear Plants; Improving Efficiency of Transmission and Distribution Systems; Demand Side Management
- Oil and Gas Supply Overview
  - Outlook for the Oil & Gas Market in Chinese Taipei; Energy Saving Measures in Refineries
- Energy Efficiency in the Industrial Sector
- Energy Efficiency in the Transportation Sector
- Green Building Promotion in Chinese Taipei

PREE Activities in Chinese Taipei

Wednesday 25 August

- Industry Consultation
  - Chi-Mei Ltd; China Steel Company; Delta Electronics Ltd/ National Stadium

Thursday 26 August

- Policy and Action Plan for Low Carbon Campus
- ESCO Activities and Promotion
- Awards for Outstanding Energy Conservation

Friday 27 August

- Present and Discuss Preliminary Recommendations

Energy Efficiency in Chinese Taipei

Major findings

Institutional Context

- In January 2010, the Executive Yuan established the Committee on Energy Conservation and GHG Emission Reduction ("the Committee") to enhance cooperation among ministries in central government.
- In May 2010, under the supervision of the Committee, relevant ministries worked together to build up the Master Plan on Energy Conservation and GHG Emission Reductions ("the Master Plan").

Energy Efficiency Goals, Targets and Strategies

- The "sustainable energy policy framework" clearly aligns energy efficiency with other energy goals (carbon reduction and energy security).
- The targets are bold and have been stated by the highest level of Government (strong leadership).
- The fundamental principles of sustainable energy policy are well articulated in the energy policy framework.

Energy Efficiency in Chinese Taipei

Major findings

Energy Data Collection and Monitoring

- Chinese Taipei has established an excellent data reporting and collection system.

Industry

- Chinese Taipei has developed specific and quantitative energy efficiency milestones for industry to contribute to economy-wide goals.
- Large enterprises in Chinese Taipei have achieved globally competitive energy efficiency performance.

Electricity

- Since 2004, power system line losses were less than 5%. This is very strong performance.
- An incentive pricing mechanism is provided for qualified customers (residential, elementary and junior high schools) to get an electricity bill discount in the range of 5% to 20% when they achieve zero or negative electricity growth.

Energy Efficiency in Chinese Taipei

Major findings

Residential and Commercial

- Mandatory economy-wide building codes for energy saving were enacted in 1997
- For commercial buildings, a Green Building chapter was included in the National Building Code
- The public sector is required to pass the Green Building design prior to obtaining a building permit

Transportation

- Excellent strategies, plans and development of mass public transportation systems
- High modal share by bus in a few cities
- Very good action plans for transportation energy efficiency improvement as part of CO_2 reduction plan

Energy Efficiency in Chinese Taipei

Major findings

Appliances and Equipment

- Standards and labelling programs have been in place since 2001, targeted products are home appliances, lighting, office equipment, gas burning appliances and vehicles.
- Chinese Taipei has developed a mechanism for post-market surveillance and inspection to ensure that the energy consumption volume and the efficiency of specified appliances or equipment meet requirements.

Education and Energy Efficiency Related R&D

- Have set out a strategic plan and action plans for investment in RD&D.
- Encouraged the involvement of the private sector.
- Actively involved in cooperation with other economies on RD&D.

Recommendations

The Review Team made 35 recommendations in its draft final report.

Institutional Context

- *The level of government office which is responsible for policies to promote energy efficiency and energy conservation should be heightened and the staff and budget for energy efficiency and energy conservation should be expanded.*
- *Coordination among relevant government agencies at the economy-wide level and at the local level should be enhanced in order to maximise energy savings across the various regions in the economy.*

Recommendations

Energy Efficiency Goals, Targets and Strategies

- *Acknowledge in energy policy documents the "trade-offs" that will likely need to be made between achieving energy efficiency and other energy goals* (MOEA to lead).
- *Ensure that there is no confusion between the use of the concepts of "energy intensity" and "energy efficiency" in energy policy documents and public statements* (MOEA to lead).
- *Ensure that the economy-wide targets are underscored by analysis that clearly shows the scale and timing of the technological and behavioural changes necessary to achieve them (MOEA to lead).*
- *Develop, in consultation with stakeholders, specific energy intensity and/or energy efficiency targets for sectors and sub-sectors of the economy (MOEA to lead).*

Recommendations

Energy Efficiency Goals, Targets and Strategies

- *Consider developing a target, preferably for an absolute reduction (or "plateau") in energy use in the Chinese Taipei economy to supplement current energy intensity and energy efficiency targets (MOEA to lead).*
- *Fast track the design and implementation of a pricing instrument to internalise the externality costs of energy use and production. For example, an energy or carbon tax or emissions trading scheme (MOEA to lead).*
- *Develop a comprehensive energy efficiency and conservation "strategy" for Chinese Taipei in consultation with stakeholders (MOEA to lead).*
- *Establish an ongoing requirement for an economy-wide energy efficiency and conservation strategy (MOEA to lead).*

Recommendations

Energy Data Collection and Monitoring

- *To establish a "Chinese Taipei Data and Information Centre", which is focused on energy data collection and monitoring.*

Industry Sector

- *Chinese Taipei should continue to collect information on global best practices for policies and measures and recent technology development related to energy efficiency improvement. BOE and relevant agencies should deploy appropriate policies and measures and technologies in the economy.*
- *Chinese Taipei should continuously encourage large energy users to report future plans for energy efficiency efforts reflecting recommendations from on-site audits and follow up their achievements.*

Recommendations

Electricity Sector

- *The government needs to adjust the electricity price to meet present electricity generation costs. Once this has been achieved, they should implement existing fuel adjustment clauses, established in January 2009, that adjust electricity prices seasonally.*
- *The BOE and Taipower should consider energy efficiency in the overall power supply to set appropriate incentives and reasonable purchase and sales tariffs for cogeneration, such as a dynamic purchasing price based on Taipower's generation cost.*
- *As part of the long-term power resource planning, new unit building costs and end-user efficiency improvement costs should be analysed using cost-benefit analysis.*

Recommendations

Residential and Commercial Sectors

- *Perform a "comparative study" of the stringency levels of Chinese Taipei's code to other similar economies with similar climate conditions and building infrastructure.*
- *Create a "performance" building energy code for residential construction.*
- *Conduct a study on code compliance to ensure (1) that green building criteria contained in the building codes are met during post construction review/approval and (2) that a high level of compliance is achieved.*
- *Include major renovations and promote "passive" design features.*
- *Promote "cool roofs" as a major component of codes and as part of the Eco-Cities program.*

Recommendations

Residential and Commercial Sectors

- *Building energy codes should be revised and increased every 2 years.*
- *Enact regulations to make building labels mandatory for both the residential and commercial building sectors.*
- *The Government should lead by example. i.e. demonstrate "net-zero energy buildings" and challenge the private sector to match/exceed agency goals/targets.*
- *Under the Eco-Cities program, have a special focus on municipal water utilities to reduce water loss and decrease energy use.*
- *Develop a Low Income Residential Retrofit Program.*

Recommendations

Transportation Sector

- *Chinese Taipei should set a sub-target for energy consumption in the transportation sector in relation to the economy-wide energy intensity target, and regularly monitor the progress towards this sub-target.*
- *Chinese Taipei should summarise best practices from cities with high modal share of mass public transportation, including lower car usage, and deploy economy-wide.*
- *Chinese Taipei should develop a holistic pricing structure for the whole passenger transport system in order to discourage the use of inefficient transportation modes and vehicles.*
- *Chinese Taipei should use targeted marketing to promote and encourage organisations and individuals to adopt efficient transportation modes and travel behaviours (e.g. personalised travel planning, workplace travel planning, eco-driving).*

Recommendations

Appliances and Equipment

- *Chinese Taipei should extend its MEPS and labelling program to other appliances and equipment in accordance with technical and economic assessment viability and technology reality, including commercial and industrial equipment.*
- *Revise MEPS for low voltage three phase squirrel-cage induction motors.*
- *Chinese Taipei should promote and provide incentives for manufacturers, importers and end users to produce and procure appliances labelled as Class 1 to achieve highest efficiency.*

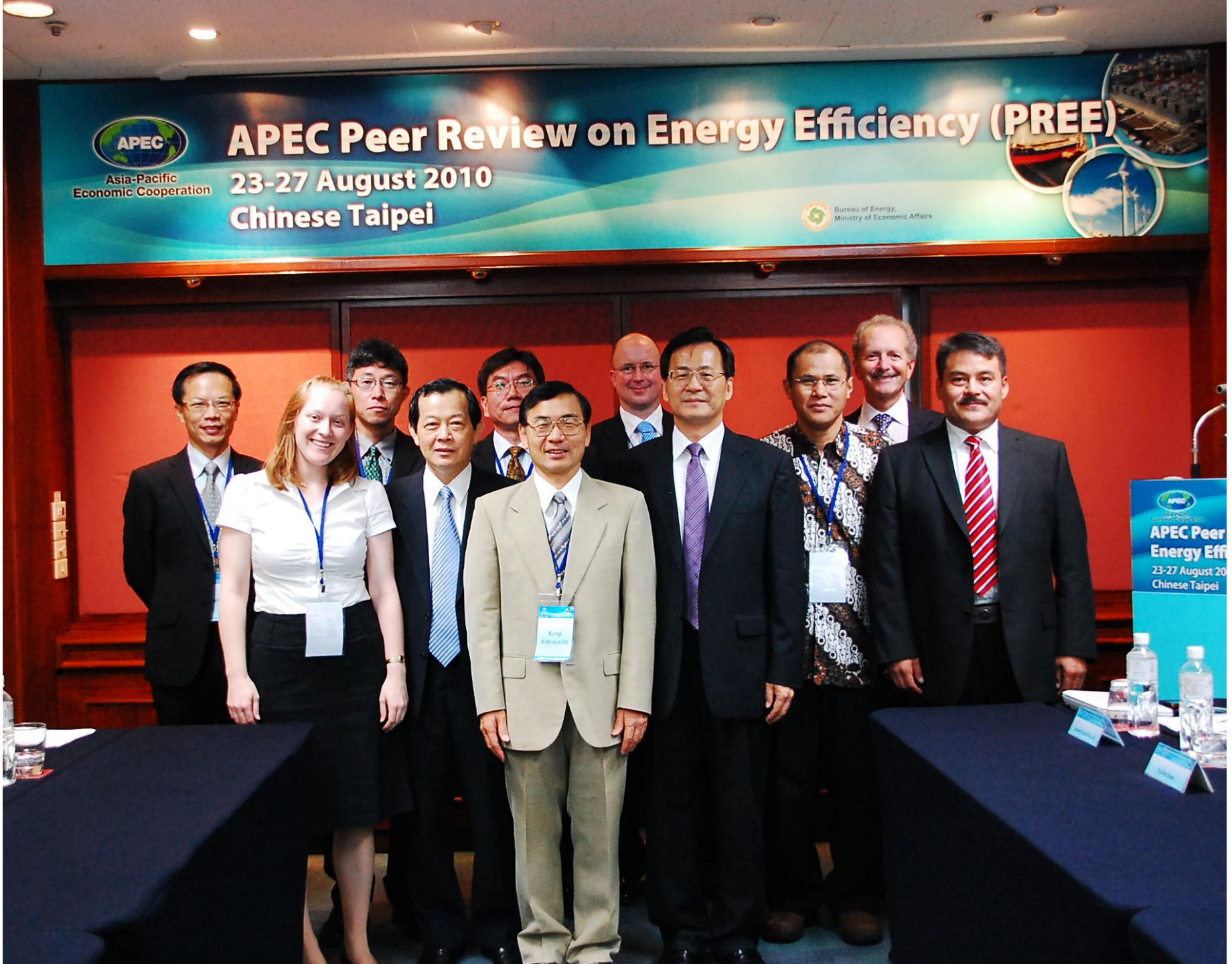
Recommendations

Education and Energy Efficiency Related Research and Development

- *An Energy Technology Roadmap should be developed in conjunction with the energy efficiency strategy to create a common understanding of the technologies and R&D required to achieve stated energy efficiency goals. The roadmap should consider a portfolio approach including a mix of short term, low risk innovation and longer term, higher risk projects.*
- *Chinese Taipei should continue to work with industry in research and development and to accelerate the commercialisation and deployment of energy efficient technology.*

Summary

- Chinese Taipei has a strong commitment to EE&C and they have implemented many policies and measures that reflect international best practice
- Have a robust framework of policies, programs, laws and action plans for promoting EE&C that clearly align the objectives of improving EE&C with the broader economic and energy goals
- There is a strong history of government engagement with businesses and the public


APEC
Asia-Pacific
Economic Cooperation
APEC Peer Review on Energy Efficiency (PREE)
23-27 August 2010
Chinese Taipei
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Ministry of Economic Affairs
Kenji
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Welcome
APEC PEEL
To National Stadium

Thank you for your attention

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