



**Asia-Pacific  
Economic Cooperation**

## **APEC Energy Efficiency Policy Workshop Summary Report: Policy and Program Evaluation**

12 April 2016, Taichung City, Chinese Taipei

**Asia Pacific Energy Research Centre (APEREC) in collaboration with:  
APEC Expert Group on Energy Efficiency and Conservation (EGEE&C)**

15 June 2016

APEC Project: Energy Efficiency Policy Workshop as part of project EWG 03 2015A – APEC Peer Review on Energy Efficiency (PREE) Phase 5 (Follow-up PREE)

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## **1. Background**

Evaluation of energy efficiency policy is essential to developing effective policy and to understanding the impacts of policy and program implementation. However, the practice of evaluation is lagging behind, especially in APEC developing economies. To support the development of this practice APERC coordinated the APEC Energy Efficiency Policy Workshop: Policy and Program Evaluation in Taichung City, Chinese Taipei on 12 April 2016. This workshop brought together policy makers and the evaluation practitioners to highlight the value of evaluation and discuss the idea of developing an Evaluation Community. The workshop provided insights of the value of having robust evaluation practices and opened a dialog between APEC policy makers and evaluators through the presentation of best practice, case studies and workshop sessions. The workshop was a first step in developing a platform to discuss and exchange experiences, current strategies, policies, protocols, and regulations for designing and implementing program and policy evaluations. The aim of the workshop was to begin a capacity building process through enabling a robust environment for evaluation, strengthening institutional capacity, and improving individual evaluator capacity.

## **2. Workshop Description**

The workshop introduced participants to evaluation, and helped them to understand how evaluation can support them to achieve their policy goals and give them practical tools that they can use in their work. The workshop aimed to develop participants' understanding of:

- How evaluation contributes to policy and program design
- Using evaluation to refine and improve policy and program effectiveness
- Evaluation approaches, methods and tools
- International evaluation practice
- The use of indicators to benchmark performance and support decision making

The workshop also helped participants to develop action plans to initiate evaluation of their energy efficiency policies and program and setting out their further capacity building needs.

The workshop used a combination of:

- Expert presentations of evaluation theory and practice supported by case study examples from developed and developing economies
- Workshop sessions to enable participants to identify how they can use evaluation to support their energy efficiency aims
- Workshop sessions to develop action plans
- Materials and references to support participants in implementing their action plans following the workshop

The agenda is in Appendix 1.

The slides used in the workshop are in Appendix 2 in a separate file.

### 3. Workshop sessions

#### Introduction to Policy and Program Evaluation

Presenter: Charles Michaelis, member of the IEPPEC board and planning committee.

This session provided an introduction to evaluation, giving participants an understanding of:

- Evaluation's role in the policy making process; both ex-ante and ex-post
- The difference between monitoring and evaluation
- Developing and using theories of change
- Typical evaluation questions and how to develop a plan to answer them
- Process, impact and economic evaluation

The session explained the role of IEPPEC and encouraged participants to take part in IEPPEC activities including the Evaluation Academy.

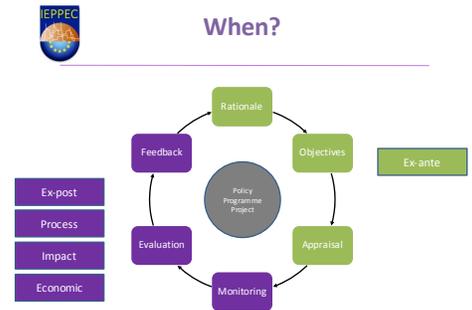
#### Impact and Process Evaluation

Presenter: Ed Vine, member of both IEPEC (US) and IEPPEC (Europe) boards and planning committees

This session built on the introduction to evaluation by providing participants with practical guidance on impact and process evaluation. The session included:

- An overview of types of evaluation, when they were appropriate and suitable research tools
- Consideration of the different audiences for evaluation results
- Explanation of impact evaluation and introduction of key concepts including gross and net impact
- Explanation of process evaluation
- An in depth explanation of theories of change building on the introduction in the first session

The session concluded with lessons that have been learned from evaluation and recommendations for policy makers



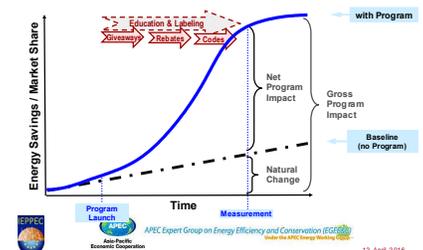
APERC Evaluation Workshop

#### Program Research & Evaluation

Research Category	Program Phase Conducted	Research Type	Assessment Level
Formative	Planning (a priori)	Market assessment (includes market characterization and baseline studies)	Market or Program
	Implementation (post-hoc)	Potential or feasibility studies	Market or Program
Summative	Implementation (post-hoc) or Post-implementation (ex-post)	Impact evaluation	Program
		Market effects	Program and Market
		Cost-effectiveness	Program or Portfolio

APERC Evaluation Workshop

#### What is Impact Evaluation?



## Impact of appliance energy efficiency standards

Presenter: Hans Alarcon, Super-Efficient Equipment and Appliance Deployment Initiative (SEAD).

This presentation described the recent energy efficiency achievements in SEAD member economies and detailed savings of 700TWh/year through measures taken in 2010-14 that had been identified through modelling using LBNL's Bottom Up Energy Analysis System (BUENAS). It covered:

- How the BUENAS model works
- The regulations that were analyzed and the results of that analysis
- A breakdown of the savings by sector and end use



### Impacts of Standards in SEAD Economies

By 2030, policy measures adopted by SEAD member governments between Jan. 1, 2010 and Dec. 31, 2014 are expected to save around 700 terawatt-hours of electricity each year equivalent to the annual electricity production of over 230 coal-fired power plants.



### BUENAS Model

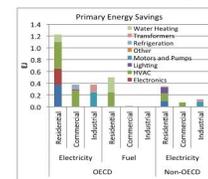
- Bottom-up strategy includes sales, usage, efficiency and costs for specific technologies.
- End uses include residential lighting, appliances, HVAC, commercial HVAC, lighting, water heating, refrigeration, industrial motors and transformers.
- Policy case driven by increased efficiency of new sales.
- Recent Achievements implemented as a "scenario" within BUENAS, like BAU, Cost-Effective Potential and BAT scenarios.

Source: M.A. Mehal, V.E. L. Urachet and S.A. della Riva de Cam. "Bottom-Up Energy Analysis System (BUENAS)—an International Appliance Efficiency Policy Tool." Energy Efficiency 6 (2013): 197-217.

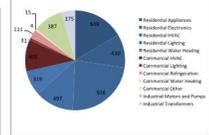


### Results

Standards in SEAD member countries could reduce emissions by 4 Gt by 2030, much of which is in residential electricity



Cumulative CO<sub>2</sub> through 2030 3.95 Gt



Savings still moderate in fuel-burning equipment, in the commercial / industrial sectors and in Non-OECD countries. (Climate analysis in Press)

## Economy presentation – Experience in evaluation in a member economy

Presenter: Eduardo Ramos Huerta, Comisión Nacional para el Uso Eficiente de la Energía (CONUEE)

This presentation described the impact evaluation of Mexico's energy efficiency appliance standards since their implementation in 2000 estimating the energy savings, environmental benefits and economic impacts.

The evaluation combined the use of modelling and primary research and drew conclusions about the effectiveness of appliance efficiency standards in Mexico.

### Energy Savings / Environmental Benefits

**Improvement** in the **average efficiency** of these appliances as a result of the standards.

- Refrigerators: 17% or 27%, depending on product class.
- Window AC: about 4%.
- Split system AC: over 7%.

Savings of about 6 TWh of electricity in 2014.

Equivalent to two 500 MW power plants.

24 million metric tons of CO<sub>2</sub> avoided through 2014.

### Economic Benefits

**For consumers / industry**

- Savings of about **\$3 billion USD** due to electricity saved by these standards between **2002 and 2014**.
- While efficiency increased, **prices did not increase** more than the rate of inflation.

**For the national economy**

- Implementation of standards **reduced peak generation capacity needs** by 1.36 GW, equivalent to **saving the need for \$180 million USD in capital investment**.
- Savings to the national treasury by **avoided subsidies**.

## Discussion

These two presentations were followed by lively discussion considering several issues:

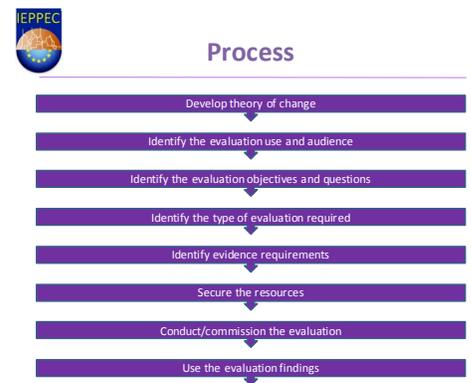
- How well the two evaluations had answered the evaluation questions identified in the presentation.
- Whether the evaluations were presenting gross or net impact as described in Ed's presentation.
- Which stakeholders the results were suitable for and how they could be used.
- The merits of modelled impacts and how they can be used in combination with primary research.

## Developing Evaluation Capacity; how to conduct an evaluation

Presenter: Charles Michaelis, member of the IEPPEC board and planning committee

This session provided attendees with simple tools and things to think about when conducting an evaluation. It set out the process they should follow and checklists for:

- Developing a theory of change
- Identifying stakeholders
- Setting evaluation questions
- Considering the evidence needed and determining the type of evaluation required
- Conducting the evaluation
- Using the findings



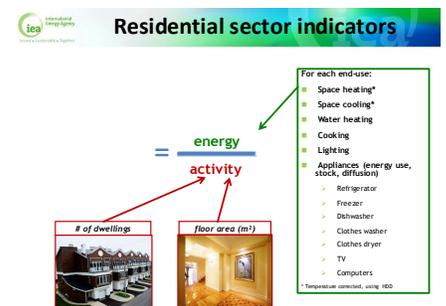
The session was followed by facilitated small group working in which participants planned an evaluation for the policies or program that they are responsible for. Participants then came back together and each small group presented their plans.

## Energy Efficiency Indicators – IEA

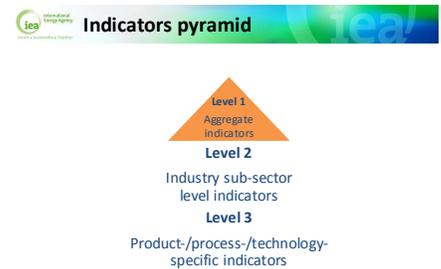
Presenter: Melanie Slade, International Energy Agency (IEA)

This presentation described energy efficiency indicators and how they can be used alongside evaluation to design policies and track progress against targets. The presentation:

- Discussed the strengths and weaknesses of energy intensity indicators.
- Described the IEA's approach to energy efficiency indicators which track the ratio of energy consumption to the activity it is used for.



- Explained the indicators pyramid and how indicators can be constructed for each level of the pyramid.
- Signposted attendees to resources available from the IEA to assist them to develop indicators and benchmark performance



This session was followed by small group working to consider what indicators participants would find useful in their work and where they might be able to obtain data to populate those indicators.

#### 4. Workshop Analysis

Thirty-one individuals coming from 11 APEC economies (China, Indonesia, Japan, Korea, Malaysia, Mexico, New Zealand, the Philippines, Chinese Taipei, Thailand, and the United States) and three APEC observer guests: the International Energy Agency (IEA), the Collaborative Labelling and Appliance Standards Program (CLASP), and the International Copper Alliance (ICA) participated in the workshop (Appendix 3).

The workshop was held in conjunction with the 47<sup>th</sup> APEC Expert Group on Energy Efficiency and Conservation (EGEE&C) meeting to maximize economy representation and facilitate logistical coordination.

The participants were keen to learn more about evaluation; there was a strong sense that it was an important field which they needed to know more about. They took part in the group work with enthusiasm and seemed attentive and engaged throughout.

Participants seemed to take away a good understanding of the benefits of evaluation and where they could start in implementing evaluation within their economies. Their understanding of the purpose and role of indicators was developed.

Areas that could be considered for inclusion in future workshops include training in:

- Developing monitoring and evaluation frameworks
- Qualitative and quantitative data collection techniques
- Analysis of data for impact and process evaluation
- Using evaluative techniques and insights in policy development

#### 5. Going Forward

Evaluation experience is limited in most APEC economies, for several reasons:

- Government initiatives often do not include evaluation
- Action plans or policy often focus only on actions (implementation of policies and programs)
- Funding of data collection and evaluation of programs and policies is often not available or of low priority

- Expertise (trained evaluators) is limited
- Data are lacking (need for standardization)

Nevertheless, economies are in the process of developing and implementing new policies on energy efficiency. There are opportunities to:

- Introduce evaluation as part of the process
- Increase expertise in governments for data gathering and evaluation (capacity building)
- Increase the body of knowledge on the effects of energy efficiency policy and programs
- Improve energy efficiency policy and program design and implementation

Building on this workshop, there is an opportunity to develop evaluation capacity in APEC member economies (especially, in developing economies) with the support of regional mechanisms as APEC and at economy level through economy-based organizations (e.g., China and Thailand). While the initial focus can be on workshops, an ideal outcome would be to have an evaluation community of practice that is self-sustainable, in funding terms, and can host an annual conference in Asia similar to the ones that have been held by the International Energy Program Evaluation Conference (IEPEC) in the US (since 1985) and by the International Energy Policy and Program Evaluation Conference (IEPPEC) in Europe (since 2010). The purpose of the conference would be to provide a forum for the presentation, critique, and discussion of objective evaluations, as well as for experience sharing about evaluation practices. It would also serve for gathering new ideas, inputs for current and upcoming debates, experience feedback and lessons learnt about all the stages of evaluations (design, collection of data, analysis of results, and evaluation use).

## **APPENDICES**

1. Workshop agenda
2. Presentations [see separate file]
3. Workshop participants

## Appendix 1

Asia Pacific Energy Research Centre  
APEC Energy Efficiency Policy Workshop  
Agenda

DATE

12

April

2016

Session	Time	Topic
1.	8:00-8:45	Registration
2.	8:45-9:00	Brief Introduction Welcoming Remarks – Host Economy Rep
3.	9:00-9:10	Opening remarks – <b>APERC</b> Opening remarks – <b>EGEE&amp;C Chair</b>
4.	9:10-9:40	<b>Introduction to Policy and Program Evaluation (Charles Michaelis – Databuild)</b> Presentation introducing the topic of evaluation, what it entails and how evaluations plays a role in robust EE policy and program development and achieving EE benefits. Show how evaluation contributes to funding decisions and provides evidence of cost effectiveness to funders.
5.	9:40-10:10	<b>Impact and Process Evaluation (Ed Vine – LBNL)</b> Presentation focuses on impact and process evaluation methods and a discussion of free riders, spillover and attribution, and recommendations for policymakers.
6.	10:10-10:30	<b>Coffee Break</b>
7.	10:30-11:00	<b>Evaluation case study</b> <ul style="list-style-type: none"><li>• <b>Impact of appliance energy efficiency standards (Hans Alarcón – CLASP)</b></li></ul>
8.	11:00-11:30	<b>Economy presentation – Experience in evaluation in a member economy</b> <ul style="list-style-type: none"><li>• México (Eduardo Ramos Huerta)</li></ul>
9.	11:30-12:00	<b>Discussion (Charles Michaelis)</b> Reactions to the case study presentations, how useful would that be in your economy, what would you change?
10.	12:00-13:00	<b>Lunch</b>
11.	13:00-13:30	<b>Developing Evaluation Capacity (Charles Michaelis - Databuild)</b> Present a guide to evaluation and roles and responsibilities of stakeholders. Provide as hand-out that attendees can complete in following small group session.

<b>Session</b>	<b>Time</b>	<b>Topic</b>
12.	<b>13:30-15:00</b>	<p><b>Small group discussion – (Charles Michaelis)</b></p> <p><b>Evaluation experience in member economies and developing capacity</b></p> <p>What type of program and policy evaluation is being conducted in your economy? How is evaluation used and by whom? What benefits do you get?</p> <p>What benefits could you obtain from evaluation? Who would be interested in evaluation? What are the challenges to conducting evaluation?</p> <p>Small groups will complete an evaluation action plan using hand-out provided in previous session.</p>
13.	<b>15:00-15:30</b>	<b>Coffee Break</b>
14.	<b>15:30-16:00</b>	<p><b>Energy Efficiency Indicators – IEA (Melanie Slade)</b></p> <p>Presentation discusses what indicators can be used, how and why, and how indicators are linked to evaluation and vice versa. Explores how IEA's energy efficiency indicators are being used and are expected to be used around the world.</p>
15.	<b>16:00-17:00</b>	<p><b>Group discussion on developing indicators in APEC – IEA facilitated (Melanie Slade)</b></p> <p>Small groups will discuss possible actions in their economies to improve indicators.</p>
16.	<b>17:00-17:10</b>	Summary
17.	<b>17:10</b>	<b>Close of Workshop</b>

## **Appendix 2**

**Workshop presentations**  
**[See separate file]**

## Appendix 3

### List of Workshop Participants

No.	Economy		Name
1	China	Dr	Pengcheng Li
2	China	Mr	Wei Ren(Steven)
3	China	Ms	Li Zhu
4	Japan	Dr	Gyuyoung Yoon
5	Korea	Mr	Inchul Hwang
6	Malaysia	Mr	Zulkiflee UMAR
7	Philippines	Mr	Antonio Nabong
8	Thailand	Mr	Warote Chaintarawong
9	Thailand	Mr	Wisaruth Maethasith
10	US	Mr	Cary Bloyd
11	Thailand	Mr	Wongkot Wongsapai
12	China	Mr	Jianlin Wu
13	China	Ms	Huai Li
14	China	Ms	Yanjie Lyu
15	China	Mr	Shicong Zhang
16	China	Ms	Jiali Kang
17	Hong Kong, China	Mr	Ming Sum CHOI
18	US	Dr	Cary Bloyd
19	Japan	Dr	Kazutomo Irie
20	Indonesia	Ms	Gita Lestari
21	Chinese Taipei	Mr	Henry Lo
22	Chinese Taipei	Mr	Tony Chang
23	Mexico	Mr	Eduardo Ramos Huerta
24	Malaysia	Mrs	Noor Afifah ABDUL RAZAK
25	Malaysia	Ms	Ida Syahrina Haji Shukor
26	New Zealand	Mr	Eddie Thompson
27	APERC	Ms	Cecilia Tam
28	APERC	Mr	Martin Brown-Santirso
29	CLASP	Mr	Hans Alarcon
30	UK (consultant)	Mr	Charles Michaelis
31	ICA	Mr	Mayur Karmarkar
32	IEA	Ms	Melanie Slade