



**Asia-Pacific
Economic Cooperation**

Promoting the Development of an Evaluation Community

Workshop Summary

**Bangkok, Thailand
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APEC Energy Working Group

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Executive Summary

This project organized and hosted a two-day workshop to bring together policy makers and the evaluation practitioners to highlight the value of evaluation, develop evaluation capacity and discuss the idea of developing an evaluation community. The workshop was held in Bangkok, Thailand in October 2017 and was co-located with the International Energy Policy and Program Evaluation Conference (IEPPEC) which took place on the two days following the workshop. The objectives of the workshop were to:

1. Bring together policy makers and the evaluation practitioners to highlight the value of evaluation and discuss the idea of developing an evaluation community.
2. Provide insights of the value of having robust evaluation practices and open a dialog between APEC policy makers and evaluators through the presentation of best practice, case studies and workshop sessions.
3. Build on the past APEC workshops In Chinese Taipei (2016) and Korea (2017) and lay the foundations for evaluation capacity building after 2017.

Prior to the workshop, the project team conducted a survey of APEC energy policy makers to explore the current evaluation landscape within APEC and inform the development of the workshop content. The responses to the survey were used to develop an Evaluation White Paper which identified opportunities to increase the take-up of evaluation and to build the capacity of evaluators.

There were 16 participants in the workshop from 10 APEC member economies. All participants completed a survey prior to the workshop which identified that participants were roughly evenly split between officials relatively new to evaluation and more experienced evaluators. They were interested in learning more about the evaluation of projects, programmes and policies particularly relating to energy efficiency in buildings, appliances and industry. They were also interested in connecting with other evaluators to share knowledge and experience.

The workshop consisted of three key elements:

- An introduction to the principles of evaluation
- Small groups working with a trainer to develop an evaluation plan for a policy that were relevant to the participant. This was supported by specific training on each element of an evaluation plan.
- Consideration of participants' needs for further support and how that should be provided.

IEPPEC identified activities that would build on the conference and workshop to provide further support to meet the needs of energy policy evaluators in Asia, such as:

- A dedicated website for Asia containing:
 - local evaluation resources (e.g., links to evaluations of programs and policies)
 - country contacts of people interested in evaluation
 - potential evaluation mentors for people desiring mentoring
 - discussion forum
 - links to past conference proceedings and other materials that will be useful to evaluators in Asia

- Webinars on relevant evaluation challenges
- Developing linkages and partnerships with existing evaluation organizations and other institutes in Asia
- A further evaluation conference in Asia in two years' time.

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1. Workshop Activities

a. Background

This project organized and hosted a two-day workshop to bring together policy makers and the evaluation practitioners to highlight the value of evaluation, develop evaluation capacity and discuss the idea of developing an evaluation community. This workshop was designed to provide insights into the value of having robust evaluation practices and open a dialog among APEC policy makers and evaluators through the presentation of best practice, case studies and workshop sessions. The workshop was intended to be 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 workshop was held in Bangkok, Thailand in October 2017 and was co-located with the International Energy Policy and Program Evaluation Conference (IEPPEC) which took place on the two days following the workshop. Some workshop attendees chose to attend the IEPPEC conference to further develop their understanding of evaluation and build connections with others involved in evaluation.

b. Objectives

The objectives of the workshop were to:

1. Bring together policy makers and the evaluation practitioners to highlight the value of evaluation and discuss the idea of developing an evaluation community.
2. Provide insights of the value of having robust evaluation practices and open a dialog between APEC policy makers and evaluators through the presentation of best practice, case studies and workshop sessions.
3. Build on the past APEC workshops In Chinese Taipei (2016) and Korea (2017) and lay the foundations for evaluation capacity building after 2017.

c. Preparation for the workshop

Two activities were conducted to prepare for the workshop:

- Prior to the workshop, a survey of energy policy-makers was conducted to explore the current state of evaluation in APEC economies. This informed the preparation of an Evaluation White Paper and the content of the workshop. The Evaluation White Paper (Appendix 1) was based on a survey of APEC energy policy makers to explore the current evaluation landscape within APEC and inform the development of the workshop content. 13 economies responded to the survey. The key insights from this activity were:
 - All economies that responded to the survey conduct evaluation of some of their energy efficiency policies; evaluation is mandatory in seven of the 13 economies that responded.
 - Most of the economies that responded seek the involvement of non-government organisations in evaluation. This is principally the private sector although academics and voluntary organisations are also involved in some economies.
 - None of the economies that responded reported barriers to the involvement of women in evaluation. However, none of the evaluations in those economies examined the impact of energy policies on women.
 - Respondents made suggestions for how take-up of evaluation could be increased and how the capacity of evaluators could be built; these suggestions were used to inform the workshop content and the Evaluation Action Plan (see below).
- All participants completed a survey immediately prior to the workshop (Appendix 2). The survey identified that:
 - Around half of participants were either just beginning in evaluation or had reviewed or used evaluation evidence. The other half were more experienced and had led evaluation projects.
 - Almost all participants had some (major or minor) involvement in the evaluation of energy efficiency policies – with buildings, industry and appliances all well represented. A smaller number of participants was involved in energy efficient transport or renewable energy.
 - Participants were interested in the evaluation of projects, programmes and policies.
 - Participants were interested in all aspects of evaluation; however, impact evaluation was the most important aspect for them.
 - Participants wanted to:
 - Understand the benefits of evaluation,
 - Learn more about how to conduct evaluation and cost benefit analysis, and
 - Make connections with other evaluators and share knowledge and experience.

Workshop participants were principally recruited through members of the APEC Energy Efficiency and Conservation Expert Working Group who were invited to nominate

attendees. Some participants were also identified through contacts with other organisations such as the International Energy Agency and the Asia Pacific Evaluation Association.

d. Workshop participation and gender

There were 16 participants in the workshop from 10 economies: Chile; China; Japan; Malaysia; Mexico; New Zealand; Philippines; Russia; Thailand and Viet Nam (see Appendix 3). Both men and women were actively encouraged to participate in the workshop; ten participants were women and eight were men. There were six trainers at the workshop; three women and three men.

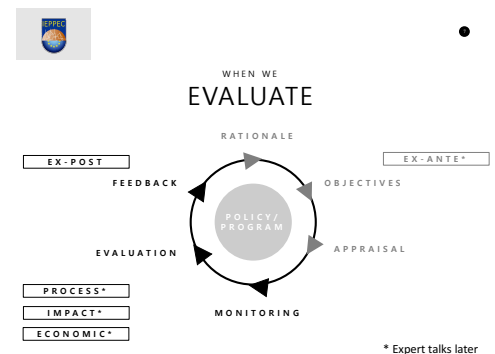
e. Workshop sessions and case studies

The workshop agenda is shown in Appendix 4.

The workshop took place over two days with six trainers:

- Philip Degens, Energy Trust of Oregon, US
- Anne Dougherty, Illume Advising, US
- Kathleen Gaffney, Navigant Consulting, UK
- Mirjam Harmelink, Harmelink Consulting, Netherlands
- Charles Michaelis, Strategy Development Solutions, UK
- Edward Vine, Lawrence Berkley National Laboratory, US

Following registration, in the first session, Edward Vine set out the agenda for the workshop and provided an opportunity for participants to introduce themselves (Presentation 1). The session provided a summary of the Evaluation White Paper and gave a brief introduction to the principles of impact and process evaluation (Presentation 2).



* Expert talks later

In the second session of the day, Charles Michaelis introduced participants to a structured eight step approach to designing and implementing evaluations (Presentation 3), as illustrated below:



This process provided the structure for the workshop and was followed by a fuller description of each step with particular discussion about developing and using a Theory of Change.

Four case studies were then presented by each of the other trainers:

- Kathleen Gaffney presented a case study on the use of ex-ante evaluation to develop programmes and policies (Presentation 4). She described how Thailand had used ex-ante evidence to design and develop their energy efficiency action plan and how California had used regular evaluations to update their energy efficient lighting programs.
- Anne Dougherty presented a case study on how process evaluation can be used to refine the design and implementation of energy efficiency policies and programs using the example of a heating, ventilation, and air conditioning (HVAC) and hot water program in the US (Presentation 5).
- Phil Degens described the key principles of impact evaluation covering concepts including monitoring and verification (M&V), deemed savings, billing analysis, sampling and attribution. He illustrated the discussion with examples of Energy Trust of Oregon programs covering buildings and heat pump controls (Presentation 6).
- Mirjam Harmeling introduced economic evaluation considering macro-economic impacts, investment effects and energy demand reduction effects (Presentation 7). She described how approaches can range in scope (project level to economy wide) and complexity. She provided a case study of the use of input/output analysis to assess the economy wide impacts of energy efficiency policies in Germany.

f. Small groups

Following the case studies, the participants were divided into four small groups, each supported by a trainer. Each group developed an evaluation plan for a relevant program; two groups looked at industry programs, and two groups looked at programs addressing energy efficient lighting and appliances.

The group work was conducted in stages (following the eight step process described above). Evaluation plan development was conducted in four sessions; each session was introduced by one of the trainers who provided the theoretical basis for the session and gave the participants subjects to consider in the group work.

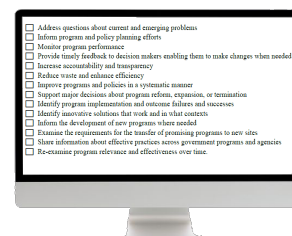
Session 1: Determine evaluation purpose, and identify and engage stakeholders

Kathleen Gaffney presented examples of evaluation purposes and provided a checklist of things for the groups to think about in developing their evaluation purpose (Presentation 8). She also suggested different categories of stakeholder who participants might wish to engage.

Each group worked to define the purpose of the evaluation and identify stakeholders for the evaluation they were planning.



WHAT
DO YOU
WANT TO
LEARN?
EVALUATION
PURPOSE
CHECKLIST



Session 2: Develop Theory of Change and identify evaluation questions and indicators

Mirjam Harmelink provided guidance on how to develop a Theory of Change and how to determine monitoring indicators and evaluation questions (Presentation 9).

Each group worked with their trainer to develop a theory of change, indicators and evaluation questions.

Feedback

Following these two stages of group work, at the end of the first day, each group gave feedback on their progress in a plenary session.

Session 3: Data collection and analysis

Phil Degens briefed the groups on data collection and analysis (Presentation 10). He explained different types of data and different data collection methods giving examples of approaches that he had used at Energy Trust of Oregon.

Each group worked with their trainer to consider what data were needed, where they would obtain it and what analysis would be conducted.

Session 4: Reporting and communication

Anne Dougherty presented recommendations for how the groups should approach reporting and communicating evaluation findings and recommendations with particular emphasis on ensuring that stakeholders' needs are carefully considered when planning reporting and communications (Presentation 11).

Each group worked with their trainer to develop a reporting and communications plan.



EVERY STEP
YOU THINK ABOUT...

YOUR ASSUMPTIONS:

- Why do you expect the policy to work like this?
- What else might happen?
- Is the policy likely to work differently in different circumstances, e.g. for different people or in different places?
- What needs to be in place for the policy to work as you expect?
- What would have happened without the policy?

EVIDENCE:

- What evidence do you have to support the assumptions?
- What evidence do you need to enable you to test whether the assumptions are right?
- Whether the policy is working as you expected?
- Where will you get the evidence you need?



Evaluation Questions and Data
Collection and Analysis

EXAMPLES

- **What are the savings from a residential HVAC program?**
Estimate residential HVAC savings with a pre/post billing analysis and a quasi-experimental design. This will include having the estimates of a nonparticipant comparison group that is compared to the participant group with a difference of differences analysis.
- **What is the awareness of a residential program?**
Estimate program awareness using a telephone survey. A representative sample of participants and nonparticipants are surveyed and asked both unassisted and assisted program awareness questions. The answers will be used to ascertain program awareness.
- **What are the implementation costs and kW savings of a residential thermostat control program?**
Estimate residential HVAC savings with a pre/post billing analysis and a quasi-experimental design. This will include having the estimates of a nonparticipant comparison group that is compared to the participant group with a difference of differences analysis.



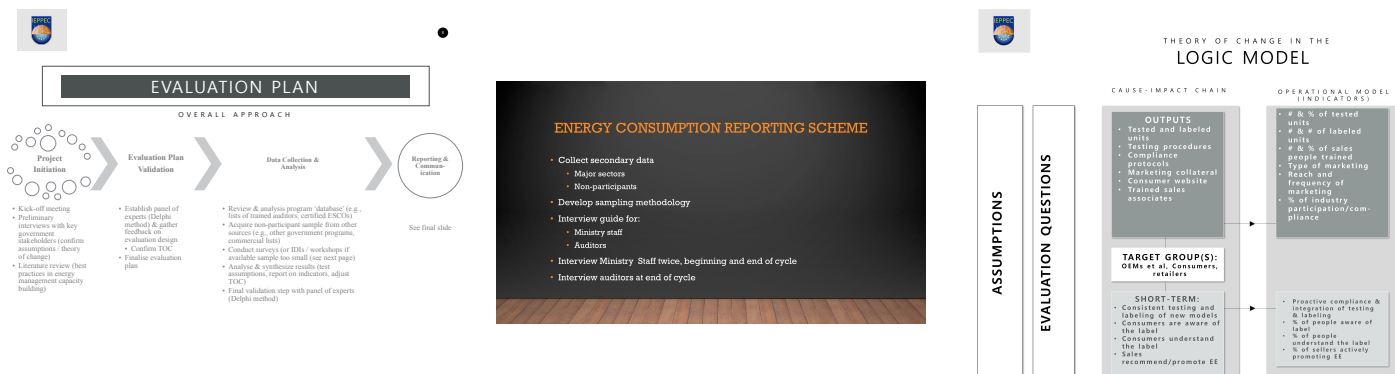
NOW, FOR YOU TO CONSIDER

- ✓ Who did you identify as your stakeholders?
What are their expectations of you?
- ✓ What "life" do you want your evaluation to have? How do you want the results to be used?
- ✓ How will you communicate your results to best support them?
- ✓ Who will you enlist to support you?
- ✓ What will you include in your report to establish credibility and guard against misuse?



g. Feedback and assessment

The four groups presented their evaluation plans to a panel comprising Melanie Slade (International Energy Agency), Edward Vine and Charles Michaelis. Each group took a slightly different approach, but all participants had succeeded in developing an evaluation plan that they would be able to use to form the basis of an evaluation in their economy.



h. Next steps

The final sessions of the workshop involved discussion of what further capacity building participants would find useful and their views of how an evaluation community could be developed. Edward Vine presented the suggestions that had arisen as part of the process of developing the Evaluation White Paper to enable workshop participants to provide feedback (Presentation 12). This discussion informed the Evaluation Action Plan which is described below.

2. Participant post-workshop survey

The results of the participant post-workshop survey are shown in Appendix 5.

Overall, participants were positive about the workshop, and they were most positive about the preparation and knowledge of the trainers and the relevance of the agenda. They rated the relevance of the workshop to them and their economy as 4.2 on a scale of 1-5 – between mostly relevant and very relevant.

15 of the 16 participants felt that they had gained new skills and knowledge from the event and 13 of the 16 participants felt their specific knowledge and skills of evaluation of energy policies and programs had increased following the event. All participants planned to apply the knowledge they gained from the workshop.

Overall, participants felt the workshop had been successful and that they had improved their knowledge and understanding of evaluation (see above).

Participants were asked whether they had any feedback for what could be improved if a similar event were run in the future. Their suggestions were:

- They felt that the groups spent too long deciding what policy or element of a policy their evaluation plan would address, and they would have preferred it if they could have been presented with a case study policy for which they could develop an evaluation plan.
- Another suggestion was to circulate the materials in advance and to provide more opportunities for participants to share experience during the workshop.
- Some would have liked the workshop to have been longer and cover more topics (although they did not make any specific suggestions).
- Some wanted the structure of the feedback session to have been made clearer, so that they would have understood better the roles which the three assessors were playing.

The trainers also reflected on the workshop and identified what had gone well and possible improvements. They felt that:

- The combination of presentations and group work allowed participants time to internalise the information that was presented and to practice using it.
- The group work was useful in generating thought and discussion.
- Exploring participants' specific interests in advance of the workshop was very useful in focusing examples and putting the groups together.
- The group work could have been more effective if participants had been provided with a template for their evaluation plan.

3. Evaluation Action Plan

Following the workshop, an Evaluation Action Plan was developed; this built on discussions during the workshop which identified the further support that participants felt would be helpful in building an evaluation community in Asia. There was a consensus that participants would value opportunities for:

- Further evaluation capacity building,
- Capacity building in energy efficiency policy and program design,
- The development of case studies relating to evaluation, and
- Providing funding for evaluation of pilot programmes and sharing the results among economies.

All participants wanted to develop their evaluation skills further. The topics that they mentioned were: impact evaluation, attribution, indicators, economic evaluation and evaluation of attitudes to energy efficiency programmes. Participants also wanted to have opportunities to share their experience and learn from others; they would welcome the opportunity to participate in an APEC evaluation community.

The most popular process for involvement was workshops followed by a conference and then webinars. Participants also suggested:

- Guidance on specific topics (such as free riders and economic evaluation) could be provided through webinars.
- Written case studies would be useful along with examples of difficulties and how they were solved.
- Mentoring of new and inexperienced evaluators by more experienced members of the profession.
- An online platform for communication.
- Establishing links with institutions (including IEPPEC, the IEA, academic bodies and regional evaluation associations) and with organisations delivering relevant activities such as UNDP's BRESL (Barriers Removal to the cost-effective development of energy Efficiency Standards and Labelling).
- Workshops and a conference that would bring evaluators together in person.

The IEA also plans to increase its support for evaluation in Asia; they will be developing the evaluation resources offered through their website and are considering providing workshops and training to specific countries/groups of countries.

IEPPEC is actively considering how it can build on the workshop and the conference and how it can support the IEA's efforts. At present, its concept for Asia includes developing an IEPPEC package of support for "evaluation seeds" (advocates and contact points for evaluation in specific economies) which would complement the IEA's activities, help the seeds to develop their expertise and which they could share with interested colleagues in their economies. This would build on the conference and workshop and could include:

- A dedicated website for Asia containing:
 - local evaluation resources (e.g., links to evaluations of programs and policies)
 - country contacts of people interested in evaluation
 - potential evaluation mentors for people desiring mentoring

- discussion forum
- links to past conference proceedings and other materials that will be useful to evaluators in Asia
- Webinars on relevant evaluation challenges
- Developing linkages and partnerships with existing evaluation organizations and other institutes in Asia
- A further evaluation conference in Asia in two years' time.

There are some individuals who may be willing to become "evaluation seeds" in China; Thailand; Indonesia; Viet Nam; Malaysia; Australia and New Zealand. These individuals could share IEPPEC information with their colleagues and could be the core of a future conference planning committee.

IEPPEC would support the IEA's efforts by providing access to relevant proceedings from past conferences and could provide an opportunity for those trained by the IEA to engage with a community of practice which would sustain their interest and further enhance their skills.

APPENDICES

1. Evaluation White Paper
2. Participant Pre-Workshop Survey
3. List of Workshop Participants
4. Workshop Agenda
5. Participant Post-Workshop Survey
6. Workshop Presentations



**APEC Workshop on Promoting the Development of an Evaluation Community
Project EWG 19-2016A**

Evaluation in APEC Economies

Submitted to APEC Operating Agent
Edward Vine
Lawrence Berkeley National Laboratory

Prepared by Charles Michaelis
Strategy Development Solutions Ltd.

May 2017

Evaluation in APEC Economies

Introduction

Asia Pacific Economic Co-operation (APEC) has established a project to organize and host a two-day workshop to bring together policy makers and evaluation practitioners to highlight the value of evaluation and discuss the idea of developing an evaluation community. This workshop will provide insights to the value of having robust evaluation practices and open a dialog between APEC policy makers and evaluators through the presentation of best practice, case studies and workshop sessions. The workshop will be 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 workshop will be in Bangkok, Thailand on October 30 and 31 and will be followed by a two-day International Energy Policy and Program Evaluation Conference (IEPPEC) on November 1 and 2. The aim is to begin a capacity building process through enabling a robust environment for evaluation, strengthening institutional capacity, and improving individual evaluator capacity.

This Evaluation White Paper has been prepared to inform the content of the workshop, identify attendees and provide a baseline snapshot of the evaluation landscape of APEC member economies, focusing on the developing economies. It is based on responses to a survey of APEC policymakers and evaluation professionals conducted in March 2017.

A questionnaire was prepared in Survey Monkey (see Appendix 1) which members of the APEC Expert Group on Energy Efficiency and Energy Conservation (EGEE&C) were invited to complete along with a small number of contacts of evaluation professionals identified through IEPPEC. 16 responses were received to the survey from 13 economies.

In view of the small number of responses and the complexity of energy efficiency policy-making in most economies, this White Paper is not comprehensive, may omit important data and may contain errors.

Readers are invited to send additional information and corrections to the author: Charles Michaelis of IEPPEC, [charles @camichaelis.com](mailto:charles@camichaelis.com).

Charles and IEPPEC would like to express their thanks to all those who completed the survey.

Key results

Respondents provided information about evaluation in their economies which is summarised in the tables below:

Economy	Evaluation required	Evaluate policies relating to				Evaluations typically conducted by:
		Industry	Appliances	Building codes	Transport	
Australia	No	Yes	Yes	Yes		
Canada	Yes	Yes	Yes	Yes	Not sure	Defined by each Province. In some, energy regulator, in other Ministry, etc.
Chile	Yes	Yes	Yes			Budget Office and Ministry of Energy
China	Yes	Yes	Yes	Yes	Not sure	
Indonesia	Yes	Yes	Yes	No	No	Ministry of Energy and Mineral Resources and Ministry of National Development Planning (BAPPENAS)
Malaysia	No	Yes	Yes			Ministry of Energy, Green Technology and Water and Energy Commission Malaysia
Mexico	No	Yes	Yes	No	Yes	Ministry of Energy (SENER) and National Commission for the Efficient Use of Energy (CONUEE)
New Zealand	No	Yes	Yes	Yes	Yes	Relevant ministries, normally built into programmes. Energy Efficiency and Conservation Authority (EECA)
Philippines	No	Yes	No		No	Department of Energy
Korea	Yes	Yes	Yes	Yes	Yes	Korea Energy Agency
Thailand	Yes		Yes	Yes		Labelling programmes for electrical appliances evaluated by Electricity Generating Authority of Thailand (EGAT); labelling programmes for non-electrical appliances and building codes evaluated by Department of Alternative Energy Development and Efficiency (DEDE)
United States	Yes	Yes	Yes	Yes		Individual state regulators and utilities
Viet Nam	No	No	Yes	No	No	Appliance policy evaluated under joint programme with Australian Department of Industry

Table 1: Conduct and management of evaluations

Respondents provided information about academics, voluntary organisations, private sector organisations and bodies that promote evaluation best practice in their countries. Respondent confidentiality precludes publishing those data here; however, all organisations mentioned will be contacted to explore how they could contribute to or participate in the workshop and Asia Pacific evaluation community. The table below shows which countries provided data for non-government organisations involved in evaluation:

	Provided details of non-government organisations involved in evaluation			
Economy	Academics	Voluntary	Private sector	Promote/encourage evaluation
Australia	Yes	Yes	Yes	
Canada	Don't know	Don't know	Yes	Yes
Chile			Yes	Yes
China	Yes	Yes	Yes	Yes
Indonesia				
Malaysia			Yes	
Mexico		Yes		Yes
New Zealand	Yes	Yes	Yes	
Philippines	Yes	Yes		
Korea	Yes	Yes	Yes	Yes
Thailand	Yes	Yes	Yes	
United States				
Viet Nam		Yes	Yes	

Table 2: Involvement of non-government organisations in evaluation

Respondents were asked about the role of women in evaluation. None felt there were barriers to women’s participation in evaluations, and most reported that women were involved in the conduct of evaluations as a matter of course. Some respondents felt that capacity building would be helpful in increasing the involvement of women in evaluation. None of the respondents reported that evaluations specifically considered the impact of policies on women. Responses are summarised in the table below:

Economy	Role of women in evaluations			
	How often are women involved?	Are there barriers to women’s participation?	Are strategies needed to increase women’s participation?	Do evaluations examine impact on women?
Australia	Regularly	No	No	No
Chile	Regularly	No	No	No
China	Regularly	No	No	No
Indonesia	Regularly	No		No
Malaysia	Always	No		
Mexico				
New Zealand	Regularly	No	No	No
Philippines	Always	No	No	No
Korea	Very often	No	No	No
Thailand	Regularly	No	Yes	No
United States	Regularly	No formal ones	Yes	Not typically
Viet Nam	Sometimes	No	Yes	No

Table 3: Involvement of women in evaluation

Increasing the promotion and take up of evaluation

Respondents were asked whether they had any suggestions for strategies that could increase the promotion and take up of evaluation in their organisation. Seven respondents made suggestions:

- a. Develop a system that provides useful information for the Institution. b. Implement an interconnected information system and cooperation between institutions in the energy sector. c. Provide reliable and up-to-date information on energy efficiency to national and international institutions.
- A national exam to recruit experts on building energy efficiency evaluation.
- Contact directly to the target group which need a different kind of evaluation.
- The evaluation usually relates to the submission/proposal of a new project/program on energy efficiency so the donors should fund and ask for evaluation report before coming up with a proposal/cooperation in a energy efficiency project/program.
- There is a broader community of practice for energy efficiency practitioners being built in the Philippines. This forms part of the EU-funded SWITCH Asia project. See: <http://www.switch-asia.eu/>
- More exchange between provinces.
- In Thailand, EGAT promotes and encourages evaluation of DSM programmes and share information and methodology about evaluation with DEDE from time to time.

Improving the capabilities of evaluators

Respondents were asked how the capabilities of evaluators in their country could be improved; 9 respondents thought training was needed, and four made suggestions:

- Yes, however economic resources are needed for training. Only a few persons are dedicated full time for statistics and indicators.
- Korea Energy Agency provides practical on-the-job professional education and training programs for energy managers dealing with energy issues including energy efficiency in construction, industry and the public sectors. The programs provide field trips and information about recent energy policies and technologies.
- Capacity buildings are very important, but it should come along with one or series of practical missions/assignments on energy efficiency evaluation. This requires more funding for conducting the energy efficiency evaluation.
- Yes, through Training of Trainers (ToT). In fact, there should be a capacity building series on this.

Implications for the workshop

Responses were received from 13 of the 21 APEC member economies and from 8 of the 11 developing member economies. This suggests that while there is some interest in evaluation, we have not yet been able to engage all the economies. We will endeavour to involve policy makers from all APEC economies in the workshop.

There is clearly a demand for further capacity building in evaluation as respondents from 8 of the 12 economies thought there was potential to improve the capabilities of evaluators in their country.

We are aware that some respondents only have a partial view of energy efficiency evaluation in their economies. This is particularly true of economies with a federal structure like Australia, Canada and the USA where policies and their evaluation can be the responsibility of both federal and state/provincial government. We have included a description of evaluation in the USA in Appendix 2 to illustrate the process in a developed economy with complex regulatory and delivery structures.

As noted in the responses, the main areas of evaluation activity in APEC member economies are policies and programmes relating to energy efficient lighting and electrical appliances and those relating to energy efficiency in industry. The workshop will focus on those areas to ensure relevance to attendees. Relevance could also be enhanced by evaluating local policy makers, e.g. from DEDE in Thailand.

Most respondents to the survey were government officials; however, several respondents identified academics, voluntary organisations and private sector bodies such as consultants with an interest in evaluation. We will reach out to the organisations that were identified by respondents with the aim of securing their involvement in the workshop – either as presenters or participants.

Respondents did not feel that any action needed to be taken to increase the involvement of women in conducting evaluations. However, at the same time, evaluations do not appear to specifically consider the impact of energy efficiency policies on women. This is clearly an area that would merit further investigation and consideration, and we will consider how to do this at the workshop.

9 of the 13 respondents asked to be kept informed of future evaluation-related activities and provided their contact details; we will invite them to the workshop and ask them to communicate the workshop to colleagues in their country.

Survey of Energy Efficiency Evaluation in APEC Economies

Introduction

This survey will be used to produce a paper which will report on the energy efficiency evaluation landscape of APEC member economies, with a focus on developing economies. Its purpose is to inform the selection of attendees and content for the two-day APEC Evaluation Workshop to be held on the 30 and 31 October 2017.

What is evaluation? An evaluation is an assessment, conducted as systematically and impartially as possible, of the relevance, performance, efficiency, and impact (expected and unexpected) of an activity, project, programme, or policy. Evaluation aims to understand why — and to what extent — intended and unintended results were achieved and to analyse the implications of the results. An evaluation should provide credible, useful evidence-based information that enables the timely incorporation of its findings, recommendations and lessons into the decision-making processes of organizations and stakeholders.

What we would like you to do Please answer the questions below to the best of your knowledge and ability. If you are aware of other people who may have useful information, please feel free to forward the questionnaire to them.

Please don't worry if you don't have all the information – anything we can learn will be valuable.

When the questionnaire is completed it will be returned to my colleague, Charles Michaelis, charles@camichaelis.com.

With thanks,

Edward Vine, Project Overseer

1. Economy being reported on:

2. Are there any requirements in your economy for evaluation of energy efficiency policies and programmes to be conducted?

Yes No Comments

3. If you answered yes to question 2 Who sets these requirements?

Is there any guidance on how to comply with evaluation requirements (where)?

Survey of Energy Efficiency Evaluation in APEC Economies

Regarding evaluation policies and programmes

Below, we ask a series of questions related to evaluation of energy efficiency policies and programmes for industrial buildings, lighting and appliances, building codes, and transport:

4. Have any evaluations of energy efficiency programmes and policies for industry been conducted? Yes

No-skip to the next question Not sure

5. If yes

Which organisation conducted the evaluation?

Contact name Contact email

Have the evaluations been published (where)?

6. Have any evaluations of energy efficient lighting and appliance programmes and policies been conducted?

Yes No-skip to the next question Not sure

<input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/>

Appendix 1 – Questionnaire

7. If yes

Which organisation conducted the evaluation?

Contact name Contact email

Have the evaluations been published (where)?

8. Have any evaluations of energy efficiency building codes been conducted? Yes

No-skip to the next question Not sure

9. If yes

Which organisation conducted the evaluation?

Contact name Contact email

Have the evaluations been published (where)?

10. Have any evaluations of energy efficient transport programmes and

11. If yes

Which organisation conducted the evaluation?

Contact name Contact email

Have the evaluations been published (where)?

Survey of Energy Efficiency Evaluation in APEC Economies

Other Organisations

12. Are there any academics with an interest in energy efficiency policy and programme evaluation? Please list.

13. Are there any voluntary organisations with an interest in energy efficiency policy and programme evaluation? Please list.

14. Are there any private sector firms with an interest in energy efficiency policy and programme evaluation? Please list

15. Are there any organisations which provide practice guidance for evaluators or which offer evaluators opportunities to meet and exchange ideas? Please list.

Survey of Energy Efficiency Evaluation in APEC Economies

Suggestions and Opportunities

Do you have any suggestions for how:

16. The promotion and take up of evaluation in your country could be increased? Any strategies?

17. The capabilities of evaluators in your country could be improved (such as training)?

18. Do you have any suggestions for other key literature/documents that we should read regarding evaluation in your country?

Survey of Energy Efficiency Evaluation in APEC Economies

Evaluation and Women

We are specifically interested in the role of women in evaluations in your country:

- 19. How often are women involved in evaluations of energy efficiency programmes and policy?
- 20. Are there barriers to women participating in such evaluations?
- 21. What strategies are needed to increase women’s participation in evaluation?
- 22. Do evaluations of energy efficiency programs and policies specifically examine impacts (costs and benefits) on women?
- 23. In general, is there anything else you would like to tell us?

24. Please give us your contact information in case we have any queries about your response (your details will not be shared with anyone else)

Name Organisation Country Email Address Phone Number

25. Would you like to be kept informed of future evaluation related activities? Yes, please keep me informed No, not at this time

26. May we contact you if we would like to follow-up on the organisations or people you listed? Yes

Not at this time

		○ ○ ○ ○

Survey of Energy Efficiency Evaluation in APEC Economies

Thank you for responding to our survey.

Pressing "Done" will take you to a confirmation page and then to the APEC website.

policies been conducted? Yes

No-skip to the next question Not sure

○ ○

○

Appendix 2 – Current Energy Efficiency Evaluation Practice in the United States

Evaluation Drivers

Evaluation, measurement, and verification (EM&V) for energy efficiency (EE) covers a wide range of practices that are undertaken to quantify the effects of EE measures, projects, program, and portfolio activities. The quantification of energy savings for a particular measure or project is typically referred to measurement and verification (M&V). The principal drivers for conducting evaluation in any jurisdiction are generally based on the following objectives:

1. **Document the impacts** of a program or policy, and determine whether the subject program (or portfolio of programs) met its energy and/or demand savings goals.
2. **Identify ways to improve current and future programs** through determining why program-induced impacts occurred.
3. **Support energy demand forecasting and resource planning** by understanding the resource contributions of energy efficiency compared to other resources.¹

In the United States, more than three decades of energy efficiency programs have been delivered by energy utilities and other program administrators in the states. Many states have adopted Energy Efficiency Portfolio Standards (EEPS) that set savings goals and targets in each respective state. EM&V requirements are thus set at the state level, and historically there were no national approaches or uniform set of EM&V protocols and methodologies. While the International Performance Measurement and Verification Protocol (IPMVP) is the basis of M&V of energy efficiency projects, many states developed their own EM&V requirements for programs. Evaluator independence is a well recognized concern, and most states require complete or partial independence of the evaluator from organizations that receive funds to deliver programs in order to avoid potential conflicts of interest.

There are generally three different types of evaluations conducted:

1. **Impact evaluations** determine the impacts (e.g., energy and demand savings) that directly result from a program activity. Impact evaluations need to be conducted in a manner that is defensible in regulatory proceedings, to ensure that public funds are effectively spent. Cost-effectiveness analysis that compares EE costs and benefits compared to the avoided cost of building new generation and transmission to meet energy demand is typically required.
2. **Process evaluations** assess program design and implementation effectiveness. Process evaluations typically review program theory & logic, and analyze program delivery to identify bottlenecks, improve delivery efficiencies, better understand market supply chains, etc.
3. **Market evaluations** estimate a program's influence on encouraging future energy efficiency uptake because of changes the program induced in the marketplace for specific products and services. These evaluations are primarily used for programs with market transformation objectives.

Market Transformation programs
employ strategies that intend to induce long-lasting, sustainable changes in the structure or functioning of a market to the point where continuation of the same publicly-funded intervention is no longer appropriate in that specific market.

There are also active efforts to evaluate the effectiveness of building codes and performance standards for appliances, lighting, and other equipment. EM&V methodologies for assessing compliance with these codes and standards often focus on both impacts and market effects.

¹ EM&V savings calculations are used to support electrical industry resource planning by utilities and electrical system operators. Their use also applies to natural gas resource planning, though to a lesser extent.

In conducting impact evaluation, the issue of additionality is often an issue. While requirements vary from state to state, many states require analyses of free-ridership, quantifying the impacts of those who benefitted from program incentives that would have taken the EE action without the program. Some states also require analysis of spillover, both that result in program participants taking additional EE actions not covered by the program (participant spillover) and non-participant spillover, when program activities have induced market changes. Taken together, these factors are often referred to as net-to-gross adjustments to program savings.

Current state of energy efficiency evaluation in the US

In recent years, there has been some convergence in EM&V practices across the US, bolstered by initiatives such as the National Action Plan for Energy Efficiency (NAPEE) SEE Action Network, DOE's Uniform Methods Project (UMP), the American National Standards Institute (ANSI), and the Environmental Protection Agency (EPA), among others.

These efforts have generally been focused on promulgating best practices, and providing reference documents that may be voluntarily adopted by state public utility commissions or other authority.

There are also a range of policy goals and technology advances that are driving increased focus on the following evaluation topics:

1. Multiple Impacts. The recognition that EE often delivers co-benefits in addition to energy savings has led to increased interest on the best means to quantify those impacts (in rare cases, there may be negative impacts of EE). These co-benefits include carbon emission reduction, air quality improvements, health impacts, increased comfort, reduced investment in transmission and distribution, energy security, and water savings. etc. Such comprehensive evaluations are scarce and not carried out routinely in most states.

2. EE as a capacity resource. Wholesale power markets have recently established rules that allow EE programs to bid the amount of energy savings that is expected to occur at peak times into regional forward capacity markets. This allows programs to receive some additional payment, based on the value the program will have on reducing expected peak demand in the region. Accuracy is particularly important where efficiency resources are enrolled in capacity markets, as reliability verification requirements for both supply- and demand-side resources are quite strict.
3. M&V 2.0 (Engineered Analytics). The advent of less expensive metering, increased computer power, and advanced data analytics techniques are driving a range of pilots and tests around the country to determine whether non-intrusive methods can accurately estimate EE program savings at much less cost than traditional methods that utilize detailed studies of a sample of program participants. M&V 2.0 can be defined as having four characteristics:
 - a. M&V 2.0 uses AMI/higher frequency consumption data to determine impacts
 - b. M&V 2.0 applies a combination of data analytic techniques to consumption data to determine impacts
 - c. M&V 2.0 is remote, and does not require on-site installation or inspection
 - d. M&V 2.0 is timely, and has the potential to provide results quicker than traditional M&V
4. Evaluation of Integrated Demand Side/Distributed Energy Resources (iDER). A boundary condition for most historical evaluations has been energy efficiency impacts. Given the abundance of new clean energy technologies and programs that can intersect with EE, and create greater temporal value for the home, business, community, or grid when combined, there is a need to develop new evaluation methods that consider all of these iDER such as demand response, distributed solar, and on-site storage, and there is a need to develop evaluation methods that look at all customer sited resources in combination. In this manner, the combined impacts of the resources would be measured, along with cost effectiveness.

Stakeholders in US energy efficiency evaluation

Essentially, the stakeholders are anyone who produces, delivers, or consumes energy, the policy makers who set clean energy targets, and market actors who deliver EE products and services. Given that much policy is determined at the state level, and governed by a Public Utility Commission (PUC), there are often additional stakeholders with an interest in the practice and outcomes of evaluation. These may include environmental groups, community activists, industry or trade groups, and consumer advocates, among others. Public hearings on efficiency programs, their evaluated results, and plans for the future, are periodically scheduled in most jurisdictions.

In addition to these stakeholders, there are others that value the benefits of energy efficiency and may require guidance on appropriate EM&V practices for the type of investments they make. These can include:

- Municipal governments (with or without an associated municipal utility)
- Rural electric coops (member owned utility)

Corporations. Many are committed to EE as part of corporate sustainability initiatives.

Appendix 3 - useful references

1. American National Standards Institute (ANSI) Energy Efficiency Standardization Roadmap https://www.ansi.org/standards_activities/standards_boards_panels/eesc/overview?menuid=3
2. IEA Multiple Benefits of Energy Efficiency (MBEE) http://www.iea.org/publications/freepublications/publication/Captur_the_MultiplBenef_ofEnergyEficiency.pdf
3. DOE Office of Energy Efficiency and Renewable Energy Uniform Methods Project (UMP) <https://energy.gov/eere/about-us/ump-protocols>
4. State & Local Energy Efficiency Action Network (SEE Action) <http://www4.eere.energy.gov/seeaction/>
5. EPA Evaluation guidelines for Clean Power Plan (CPP) <https://www.epa.gov/cleanpowerplantoolbox/evaluation-measurement-and-verification-emv-guidance-demand-side-energy>
6. California Measurement and Advisory Council (CALMAC) <http://www.calmac.org/>
7. Energy Efficiency Evaluation, Measurement, and Verification; A Regional Review of Practices in China, the European Union, India, and the United States http://www.raonline.org/knowledge-center/energy-efficiency-evaluation-measurement-and-verification/?_sf_s=evaluation+practices

Appendix 2 – Participant Pre-Workshop Survey

PROMOTING THE DEVELOPMENT OF AN EVALUATION COMMUNITY

APEC Workshop – survey of participants
Results
October 2017

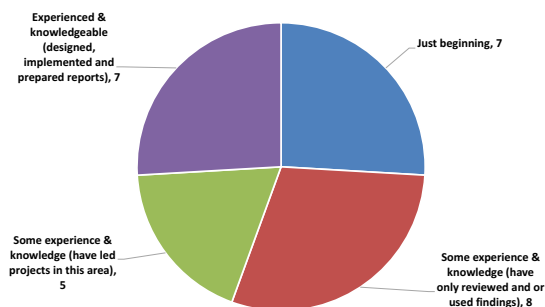
STRATEGY
DEVELOPMENT
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About the participants

- 27 responses – 100% of intended participants
- Range of expertise:
 - Energy conservation/efficiency
 - Engineer
 - Social scientist
- Range of seniority:
 - Director
 - Deputy Head/Assistant Secretary
 - Specialist
 - Researcher
- Average of 5 years in their current positions
- Range from less than one year to 22 years

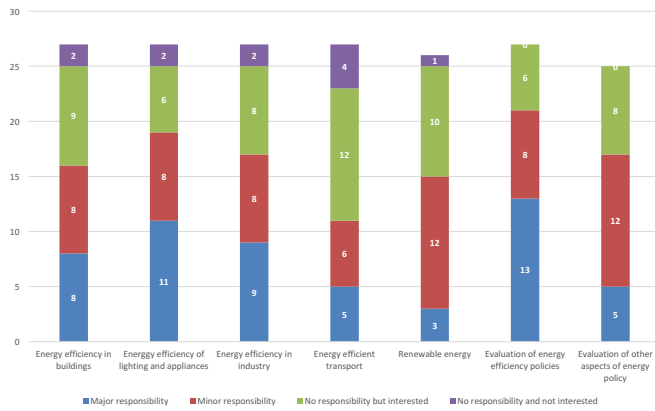
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Evaluation experience



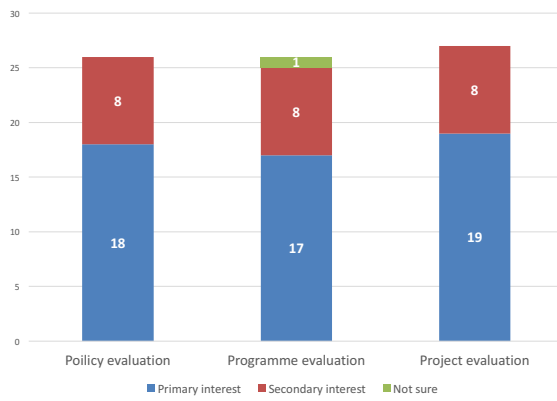
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Area of responsibility



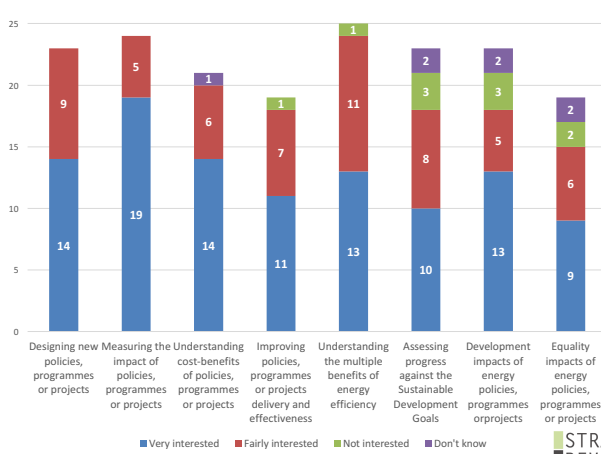
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Area of interest



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Area of interest



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What they want to get from the workshop

- Some things we can do...
 - Understand the benefits of evaluation (especially assessing impact)
 - Learn more about how to conduct evaluation
 - Learn from others/share knowledge and experience
 - How to do cost benefit analysis
 - Make connections with other evaluators
- Some things we might...
 - Qualifications for evaluation experts
 - How to fund evaluation
- Some things that we can't...
 - Learn about energy efficiency best practice
 - How to implement energy labelling regulations
 - Developing energy efficiency and conservation legislation

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Appendix 3 – List of Workshop Participants

Title	Name	Economy	Organisation
Ms.	Amelia Smith	NZ	Energy Efficiency and Conservation Authority (New Zealand)
Ms.	Anne Dougherty	US	Illume Advising
Mr.	Charles Michaelis	Others	Strategy Development Solutions
Ms.	Diana Patricia Anaya	MEX	National Commission for the Efficient Use of Energy (Conuee)
Mr.	Edward Vine	US	Lawrence Berkeley National Laboratory
Mr.	Hoang Viet Dung	VN	Green Development Center
Mr.	Ilya Dolmatove	RUS	Institute of Pricing and Regulation of Natural Monopolies, Higher School of Economics
Mr.	Jagathisvaran Ramachandran	MAS	Ministry of Energy, Green Technology and Water
Ms.	Jialing Hong	PRC	Aciaworks
Ms.	Kathleen Gaffney	US	Navigant Consulting
Ms.	Kritika Rasisuddhi	THA	Electricity Generating Authority of Thailand
Ms.	Mariana Pavon	CHL	Ministry of Energy
Mr.	Martin Brown-Santirso	NZ	APERC
Ms.	Melanie Slade	Others	IEA
Ms.	Mirjam Harmelink	Others	Harmelink Consulting
Ms.	Nigoon Jitthai	US	USAID/RDMA
Mr.	Pedro Hernández	MEX	National Commission for the Efficient Use of Energy (Conuee)
Mr.	Phil Degens	US	Energy Trust of Oregon
Mr.	Phuriwat Malakul Na Ayutthaya	THA	Department of Alternative Energy Development and Efficiency
Mr.	Romeo Santos	PH	University of Philippines
Ms.	Rosa Riquelme	CHL	Ministry of Energy
Ms.	Rosemarie Sumulong	PH	Department of Energy
Ms.	Siti Sarah Sharuddin	MAS	Ministry of Energy, Green Technology and Water
Ms.	Thelma Agagas	PH	Department of Energy
Mr.	Zheleznov Kirill	RUS	Russian Energy Agency

Appendix 4 – Workshop Agenda

APEC Workshop on Promoting the Development of an Evaluation Community 30-31 October, Bangkok, Thailand

Final Agenda

Objectives

The workshop will bring together policy makers and the evaluation practitioners to highlight the value of evaluation and discuss the idea of developing an evaluation community.

This workshop will provide insights of the value of having robust evaluation practices and open a dialog between APEC policy makers and evaluators through the presentation of best practice, case studies and workshop sessions.

The workshop will be designed to build on the past APEC workshops In Chinese Taipei (2016) and Korea (2017) while remaining accessible to participants who did not attend these workshops. It will also lay the foundations for evaluation capacity building after 2017.

Programme

Monday 30 October 2017		
8.00-8.45	Registration and coffee	
8.45-10.30	Evaluation overview – recapping on the earlier workshops and introducing new participants to the principles of evaluation. <ul style="list-style-type: none">• Introductions• Summarise evaluation white paper• Introduction to evaluation• Impact and process evaluation• Questions and discussion	Charles Michaelis Edward Vine
10.30-10.45	Coffee break	
10.45-11.15	How to conduct evaluation; introduction to evaluation planning tool and theories of change	Charles Michaelis
11.15-12.15	Four 15 minute case studies each illustrating a different aspect of evaluation <ul style="list-style-type: none">• Ex-ante evaluation• Process evaluation• Impact evaluation• Economic evaluation	Kathleen Gaffney Anne Dougherty Phil Degens Mirjam Harmelink
12.15-13.15	Lunch	

	Introduction to planned exercise; attendees will be split into 4 to 6 small groups to develop a detailed evaluation plan for an energy efficiency program or policy (each group to consider one of lighting, industry or appliances depending on interest and background of attendees). Each group will be supported by one trainer who will coach them through the process.	Charles Michaelis 5 mins
13.15-14.15	<ul style="list-style-type: none"> Step 1 Determine evaluation purpose, identify and engage stakeholders 	Kathleen Gaffney 15 minute briefing then work in small groups with a coach
14.15-16.30	<ul style="list-style-type: none"> Step 2 Develop theory of change and identify evaluation questions and indicators. 	Mirjam Harmelink 15 minute briefing then work in small groups with a coach
15.00-15.15	Coffee break	
16.30-17.00	Questions and discussion Closing	
Tuesday 31 October 2017		
8.00	Registration and coffee	
8.30-10.00	<ul style="list-style-type: none"> Step 3 Determine most appropriate methods (statistical analysis, experimental design, qualitative and quantitative research) identify evidence (data) sources and collect data 	Phil Degens 15 minute briefing then work in small groups with a coach
10.00-10.15	Coffee break	
10.15-11.45	<ul style="list-style-type: none"> Step 4 communicate results and share learning 	Anne Dougherty 15 minute briefing then work in small groups with a coach
11.45-12.30	<ul style="list-style-type: none"> Integrate steps into evaluation plan 	Working with coach
12.30-13.15	Lunch	
13.15-15.00	Each group to present their evaluation plans to panel; questions and discussion	Melanie Slade Martin Brown-Santirso
15.00-15.15	Coffee break	
15.15-16.00	Learning from exercise – capacity building needs 15 mins in groups and then feedback in plenary	Charles Michaelis
16.00-17.00	Next steps in building an evaluation community Closing	Edward Vine

Appendix 5 – Participant Post-workshop Survey

APEC Workshop on Promoting the Development of an Evaluation Community Summary of Participant Evaluation

All 16 attendees of the workshop completed an evaluation survey at the end of the event.

Opinion of the event

Participants were asked whether they agreed or disagreed with 8 questions about the structure and content of the event; a strongly agree response was scored as 3, agree 2 and disagree 1. The mean responses are shown in the chart below:

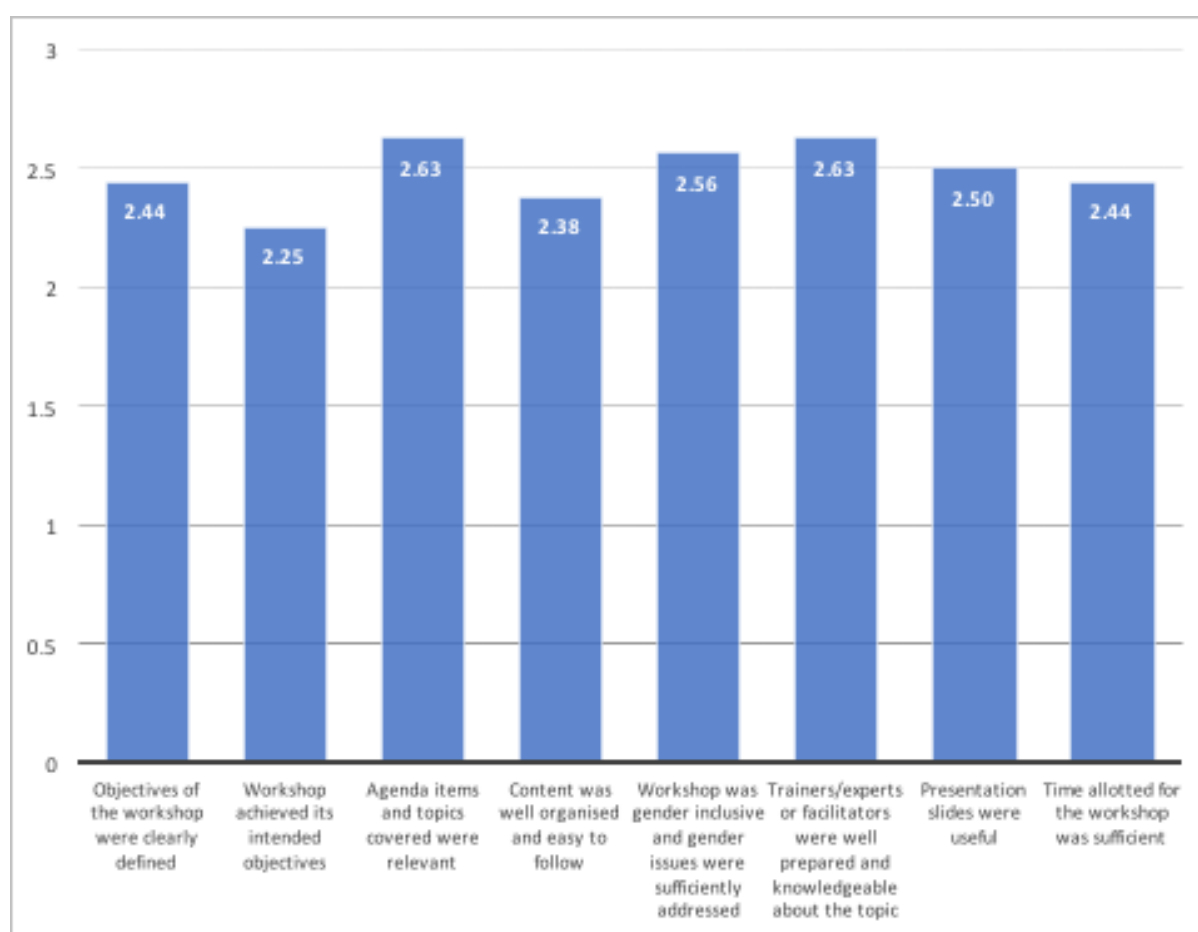


Figure 1: Opinion of the structure and content of the event

It can be seen that overall participants were positive about the event with only one respondent disagreeing with one statement (that the workshop was gender inclusive and that gender issues were sufficiently addressed). Participants were most positive about the preparation and knowledge of the trainers and the relevance of the agenda.

Participants were also asked about the relevance of the workshop to them and their economy. This was scored on a scale from 5 (very relevant) to 1 (not relevant). Five participants rated the event a 5 (very relevant) and two participants rated it at (somewhat

relevant), the remainder rated it at 4 (mostly relevant). The mean score was 4.2 – between mostly relevant and very relevant.

Participants comments included:

- China has developed a lot of policies in 15 years among which need good evaluations to move on
- Several programmes and projects are being implemented by our economy. We could apply the evaluation process to these projects
- Evaluation is not yet mandatory. However, we still do it in smaller scale or by programs. Anticipating the outcome of a program is important as it will determine the funds that we will receive (outcome based budgeting)
- We do not often participate in program evaluation
- Support in important area and tell us how other countries do it
- Several programs and projects are being implemented by my economy so it is very important to evaluate its progress and if its objectives were achieved
- Pitched lower than we need

Participants had some suggestions for how the workshop could have been improved. Particularly, they would have liked a case study to be provided for the evaluation planning exercise rather than basing it on their own policies. Other suggestions were to circulate the materials in advance and to provide more opportunities for participants to share experiences. Some would have liked the workshop to have been longer and cover more topics (although they did not make any specific suggestions).

Results of the workshop

Participants were asked for their view of the workshop's results/achievements; **15 of the 16 participants felt that they had gained new skills and knowledge from the event.**

Most felt they had learned more about evaluation and gained a clearer understanding of evaluation approaches and how to apply them. Some participants also felt they had learned more about the value of evaluation. Two respondents mentioned the benefits of bringing people from different economies together. Comments included:

- Increased understanding of the process
- Getting diverse perspectives together
- We improved our knowledge in the field of evaluation
- Seeing the value of evaluating projects and programmes
- Application of evaluation to current work
- Obtain clear understanding of evaluation methodology
- 8 steps of evaluation especially to identify data and evaluation questions
- Building a network/alliance among participants from various countries/sectors who will be practical champions for evaluation in energy sector

13 of the 16 participants felt their specific knowledge and skills of evaluation of energy policies and programs had increased following the event. Some of their comments are below:

- After participating in this workshop, I have the basis to understand the evaluation process
- We were able to gain sufficient knowledge in the process of evaluating projects
- I can apply the evaluation to my project
- Just joined the ministry for the past four years. Little knowledge, however, after participating, I gained knowledge and realised the importance of evaluation

There were three participants who did not rate their knowledge and skills as high both before and after the workshop. Their comments included:

- This workshop was pitched slightly too low for me, but I knew that and was happy to be involved anyway
- I learned, but it's not enough to improve my level

All participants planned to apply the knowledge they gained from the workshop: their plans included developing their approach to evaluation and communicating and sharing their learning to others.

Interest from government and the private sector

Participants were asked about the level of interest in evaluation from government in their economy; responses ranged from low (one participant) to very high level of interest (four participants). Where government interest is high, it is often a prerequisite for budgetary approval. Some participants said their governments did not allocate sufficient resources or direction on evaluation.

Participants were asked about the level of interest in evaluation from the private sector in their economy; responses ranged from none or low (three participants) to very high level of interest (two participants). Most felt the private sector should be interested in evaluation as that would ensure energy efficiency policy was effective and did not place too great a burden on the public (?) sector.

About the future

Participants were asked what they would like APEC to do next and whether there were opportunities to link this project's outcomes to other APEC activities or individual actions by member economies. Their responses included preferences for:

- Further evaluation capacity building
- Capacity building in energy efficiency policy and program design
- The development of case studies relating to evaluation
- Providing funding for evaluation of pilot programmes and sharing the results among economies

All participants would like to develop their evaluation skills further and to participate in an APEC evaluation community. The topics that they mentioned were impact evaluation, attribution, indicators, economic evaluation and evaluation of attitudes to energy efficiency programmes. The most popular process for involvement was workshops followed by a conference and then webinars.

Appendix 6 – Workshop Presentations

1. Workshop Introduction (Edward Vine)
2. Evaluation Overview (Edward Vine)
3. Evaluation Toolkit (Charles Michaelis)
4. Ex-ante Evaluation (Kathleen Gaffney)
5. Process Evaluation (Anne Dougherty)
6. Impact Evaluation (Phil Degens)
7. Economic Evaluation (Mirjam Harmelink)
8. Step 1 – Evaluation Purpose (Kathleen Gaffney)
9. Step 2 – Theory of Change (Mirjam Harmelink)
10. Step 3 – Data Collection (Phil Degens)
11. Step 4 – Reporting & Stakeholder Engagement (Anne Dougherty)
12. Next steps (Edward Vine)



@

FIRST OF ALL

- ✓ Sign-in sheet for APEC-funded participants: Sign it for reimbursement!
- ✓ Complete Workshop Evaluation by end of 2nd Day: Or you cannot go leave hotel
- ✓ Meals: you are on your own!
- ✓ Lunch: 5th Floor restaurant – discount coupon – pay be room #, credit card, cash
- ✓ Agenda – basically the same, but Charles will announce changes later
- ✓ Emergency guidance (Paul)
- ✓ Thanks to Experts, APEC, IEPEC, IEPPEC, US Department of Energy, Charles Michaels, Eastin Hotel & especially Participants!

Peer-reviewed papers and panels

Every two years in Europe (even years)

Sister conference in North America (odd years)

First conference in Asia - Bangkok (Nov. 1-2, 2017)

International Energy Policy and Programme Evaluation Conference

SESSION OUTLINE

WHY WE ARE HERE

EVALUATION WHITE PAPER

INTRODUCTIONS

WHY ARE WE HERE?

CHALLENGES

OPPORTUNITIES


VISION

@

CHALLENGES

EVALUATION EXPERIENCE IS LIMITED IN MOST ECONOMIES IN ASIA


- ✓ Government initiatives do not include evaluation
- ✓ Action plans or policy often focus only on 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
- ✓ Evaluation data are lacking or not standardized



★ OPPORTUNITIES


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



⚡ VISION

- ✓ Support the strengthening of evaluation leadership and capacity, especially in developing countries
- ✓ Foster the cross-fertilization of evaluation theory and practice in Asia
- ✓ Address international challenges in evaluation

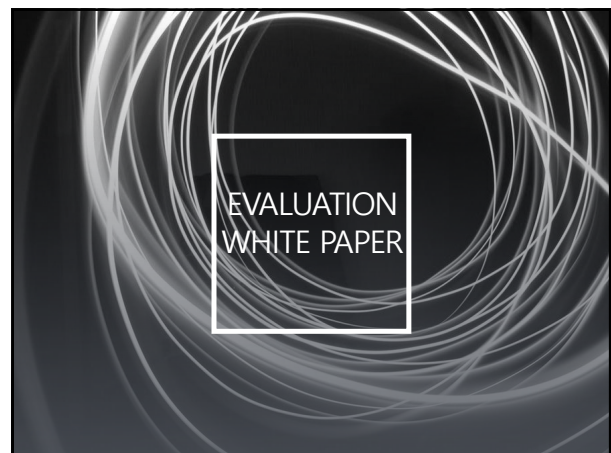
TIMELINE


2015 OCTOBER ▼	APERC Evaluation Workshop (Taichung City, Chinese Taipei)	2017 MARCH ▼	ACEF Evaluation Workshop (Manila, Philippines)
International Workshop for Asia Energy Efficiency Program and Policy Evaluation (Seijing)	2016 APRIL ▲	APERC Evaluation Workshop (Incheon, Republic of Korea)	2017 JUNE ▲



UPCOMING

2017 OCTOBER ▼	IEPPEC Asia-Pacific (Bangkok)
APEC Evaluation Workshop (Bangkok) [TODAY]	2017 NOVEMBER ▲







EVALUATION

WHITE PAPER

In 2017, link to evaluation survey was sent to experts in APEC member economies, as well as Expert Group on Energy Efficiency and Conservation and Energy Working Group members – multiple responses per economy were accepted


16 Surveys were completed from 13 (of 21) economies (and 8 of 11 developing economies)

SURVEY

TOPICS

- ✓ Evaluation of energy efficiency policies and programs for industrial buildings, lighting and appliances, building codes and transport.
- ✓ Other organizations involved in evaluation.
- ✓ Suggestions for promoting evaluation and improving capability of evaluators.
- ✓ Role of women in evaluation (involvement, barriers, strategies, and impacts)




KEY SURVEY FINDINGS


MAIN AREAS OF EVALUATION ACTIVITY

ENERGY EFFICIENCY IN INDUSTRY




EVALUATION STATUS


ECONOMY	EVALUATION REQUIRED	EVALUATE POLICIES RELATING TO			
		INDUSTRY	APPLIANCES	BUILDING CODES	TRANSPORT
Australia	No	Yes	Yes	Yes	
Canada	Yes	Yes	Yes	Yes	Not sure
Chile	Yes	Yes	Yes	Yes	
China	Yes	Yes	Yes	Yes	Not sure
Indonesia	Yes	Yes	Yes	No	No
Malaysia	No	Yes	Yes		
Mexico	No	Yes	Yes	No	Yes
New Zealand	No	Yes	Yes	Yes	Yes
Philippines	No	Yes	No		No
Korea	Yes	Yes	Yes	Yes	Yes
Thailand	Yes	Yes	Yes	Yes	
United States	Yes	Yes	Yes	Yes	
Viet Nam	No	No	Yes	No	No




GENDER AND EVALUATION

Most respondents did not feel that any action was needed to increase the involvement of women in conducting evaluations.

But evaluations do not appear to specifically consider the impact of energy efficiency programs and policies on women

STRATEGIES TO INCREASE PROMOTION AND TAKE UP OF EVALUATION

TRAINING

EXAMPLES

- ✓ Economic resources are needed for training
- ✓ Provide practical on-the-job professional education and training programs for energy managers dealing with energy issues including energy efficiency in construction, industry and the public sectors [Korea Energy Agency does this]
- ✓ Capacity building is very important, but it should come along with one or series of practical missions/assignments on EE evaluation
- ✓ Requires more funding for conducting the EE evaluation
- ✓ Training of Trainers



IMPROVING CAPABILITIES OF EVALUATORS

EXAMPLES

- ✓ Create a **national exam** to recruit experts on building energy efficiency evaluation
- ✓ Develop a **system** that provides **useful** information for the institution
- ✓ **Donors** should fund and ask for an evaluation report before developing a proposal on an EE project/program
- ✓ Provide **reliable and up-to-date information** on energy efficiency to national and international institutions






USE OF SURVEY FINDINGS

Information **was** used in preparing:



- ✓ White Paper on evaluation in APEC region, focusing on developing countries in Asia
- ✓ Agenda for today's workshop

Information **will be** used in:

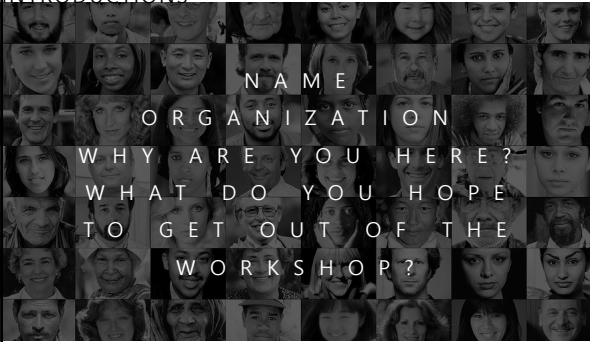
- Preparing Final Report on APEC project


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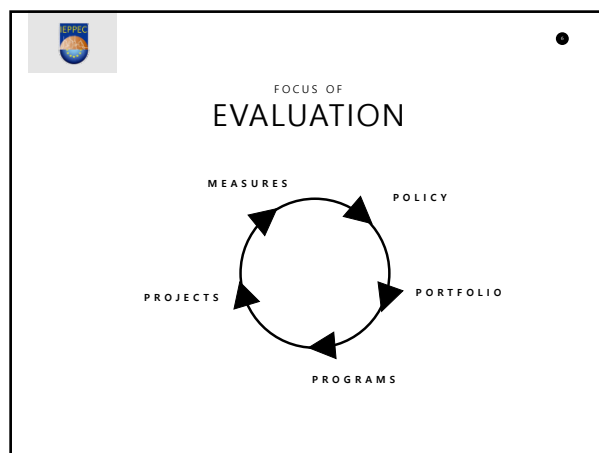
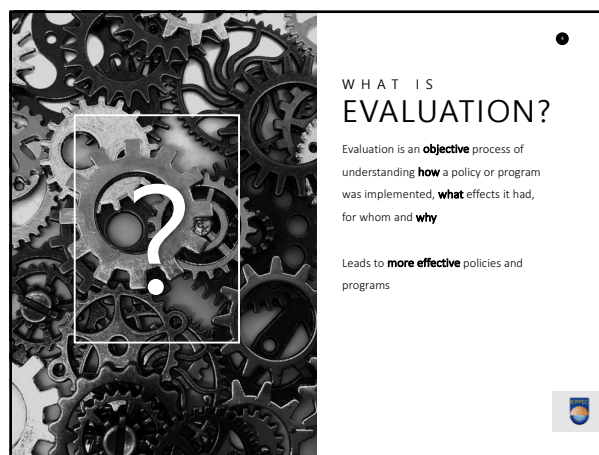
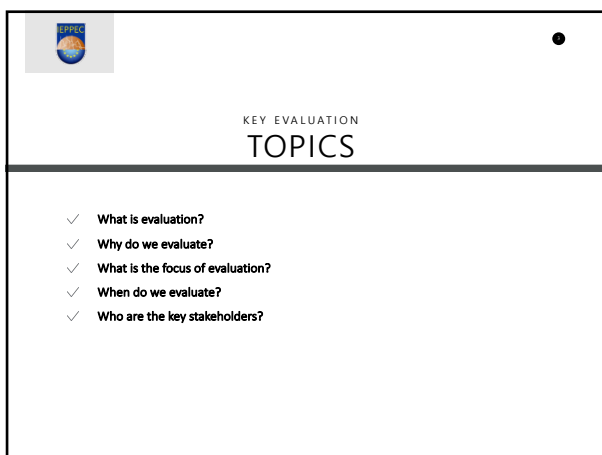
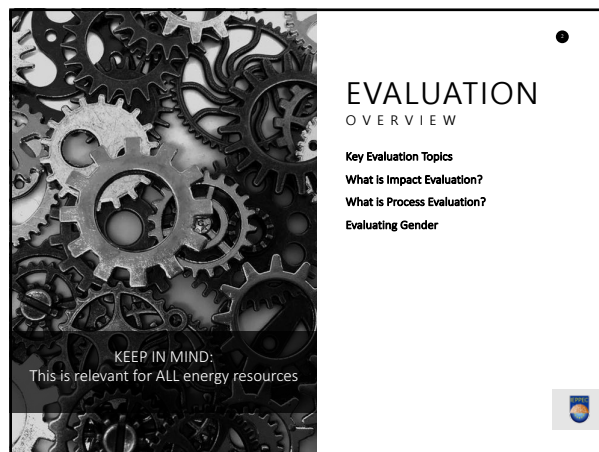
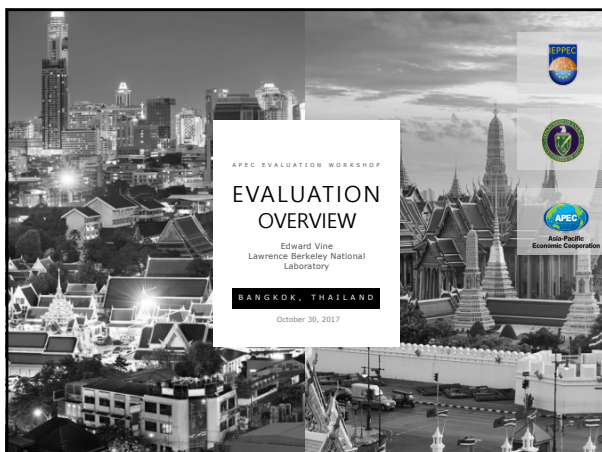



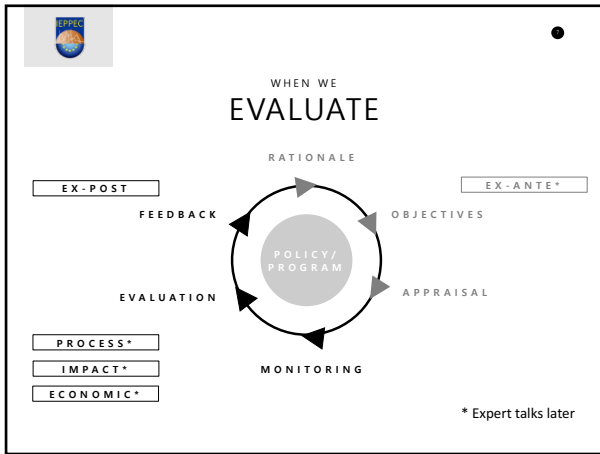
INTRODUCTIONS



NAME
ORGANIZATION
WHY ARE YOU HERE?
WHAT DO YOU HOPE
TO GET OUT OF THE
WORKSHOP?







WHO ARE KEY STAKEHOLDERS?

- Program implementers
- Funders
- Regulators
- Planners
- Policymakers
- Elected and appointed officials
- Special-Interest groups

WHAT IS IMPACT EVALUATION?

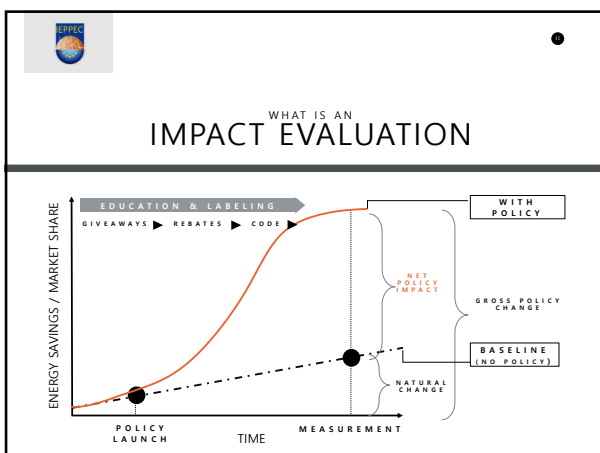
PURPOSE/OBJECTIVE
Estimate the change due to programs or policies
Change in energy use, greenhouse gas (GHG) emissions, the market share for efficient products, other benefits, etc.

KEY OUTCOMES
Gross energy and demand savings or changes in energy use
Net (attributable) energy and demand savings reflecting free riders & spillover

WHAT IS AN IMPACT EVALUATION

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Estimate the change due to programs or policies
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KEY OUTCOMES
Gross energy and demand savings or changes in energy use
Net (attributable) energy and demand savings reflecting free riders & spillover




WHICH IMPACTS?

ENERGY
Electricity: use (kWh) and demand (kW)
Natural gas

TIME PERIOD
Annually, seasonally, weekly, daily, hourly
Annual impact and lifetime impacts

INCREASING INTEREST IN MULTIPLE BENEFITS (NON-ENERGY IMPACTS)
Employment, indoor and outdoor air quality, health, climate change, economic, etc.



DATA NEEDED TO ASSESS GROSS IMPACTS

1 ENERGY USAGE
Monthly consumption
Metered or monitored energy usage


3 HOURS OF OPERATION
For buildings or measures

5 OTHER PHYSICAL VARIABLES
Temperature, flow, weather

2 LOAD SHAPE DATA
Day, season, year

4 PHYSICAL CHARACTERISTICS
Buildings and equipment
Size and location

6 OCCUPANCY
Building occupancy schedules
Occupant data



DATA COLLECTION & ANALYSIS METHODS FOR EVALUATION OF GROSS IMPACTS

ENGINEERING METHODS


BASIC STATISTICAL BILLING ANALYSIS

SHORT-TERM MONITORING

END USE METERING

MULTIVARIATE STATISTICAL ANALYSIS

INTEGRATIVE METHODS
COMBINE TWO OR MORE





PROGRAM ATTRIBUTION

FREE RIDERS

PARTICIPANT SPILLOVER

NON-PARTICIPANT SPILLOVER

DATA COLLECTION & ANALYSIS METHODS FOR EVALUATION OF NET IMPACTS


SURVEYS OF PARTICIPANTS & NON-PARTICIPANTS & MARKET ACTORS

MARKET SALES DATA ANALYSIS

TOP DOWN EVALUATION

STRUCTURED EXPERT JUDGMENT

INTEGRATIVE METHODS
COMBINE TWO OR MORE





WHAT IS PROCESS EVALUATION?

Process (formative) evaluation focuses on **how** a program is **implemented** and **operating**

- Identifies procedures and program logic
- Describes how it operates, the services delivered and the functions (roles and responsibilities)
- Assesses reasons for success or problems

Results in **recommendations** to improve program effectiveness and efficiency


- Energy and GHG impacts, risk reduction and other multiple benefits, and cost-effectiveness





VALUE OF A PROCESS EVALUATION

Evaluations provide a systematic way to learn from program experiences, both within a particular program over time and across programs being fielded simultaneously or contemplated for the future

Evaluations provide assurance to interested parties that programs are being implemented effectively and modified or refined as necessary






FOCUS OF A PROCESS EVALUATION

Explaining why the program succeeds or fails to deliver savings

- ✓ Barriers to participation
- ✓ Unanticipated behavioral response
- ✓ Program operations
- ✓ What is working well?




EVALUATING GENDER

Gendered aspects of energy and energy efficiency are understudied.

Need for more rigorous empirical research – especially if we are to achieve ambitious energy savings and emissions reduction goals (adoption and use of EE technologies)


Need for gender balance in research teams

Evaluators will need to evaluate the possible uneven distribution of burdens as a result of energy saving in households

Gender balance need in evaluation teams

BOTTOM LINE

If gender impacts are not evaluated, they are unlikely to be given any attention


RECOMMENDATIONS
FOR EVALUATORS: ONE

Ensure that the Terms of Reference for the project evaluation team requires gender analysis
Team should have gender expertise, be gender balanced and engage with relevant project and other partners working on gender

Partner with organizations with gender expertise for reviewing the evaluation process or reports

Monitor and evaluate:

- Changes in women’s empowerment, work productivity, income, health, education, food security
- Barriers to participation in project activities
- Unexpected impacts on women



RECOMMENDATIONS
FOR EVALUATORS: TWO


Develop evaluation frameworks that examine *participation* in policy and program design and implementation by gender and that examine *impacts* of such programs and *adoption* of technologies by gender


Close-up, qualitative methods are essential

- Participant observation
- Qualitative interviews
- Life histories
- Diaries




TIME FOR QUESTIONS

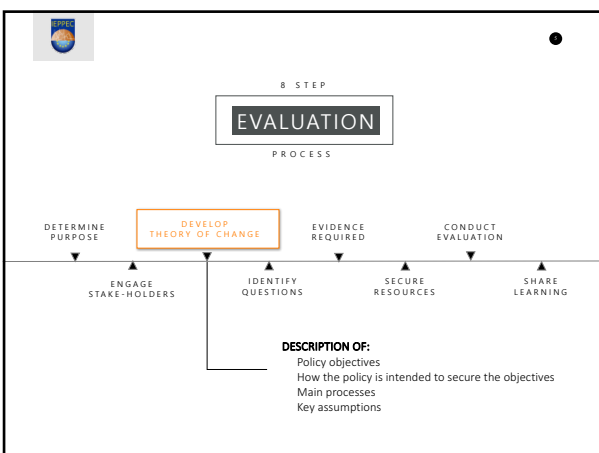
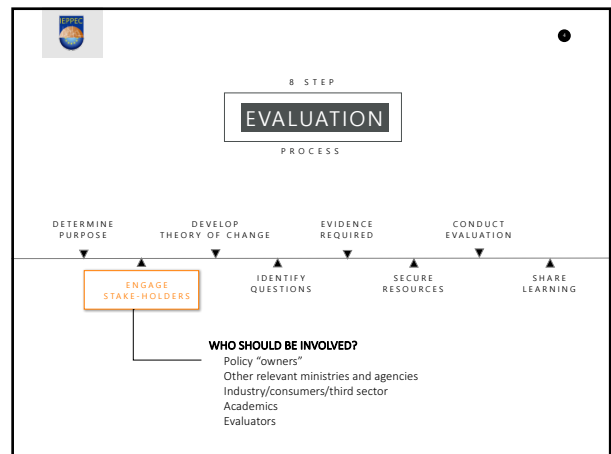
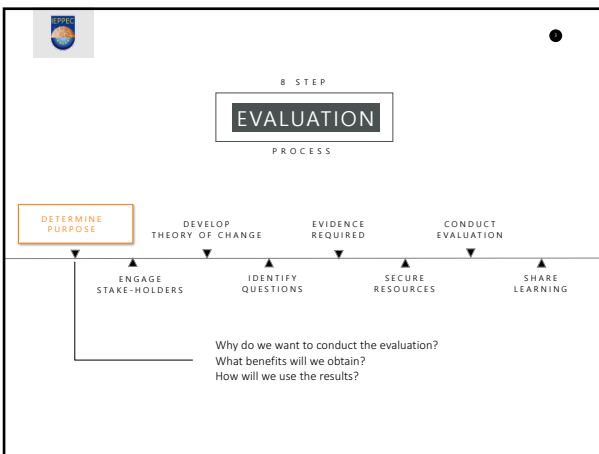
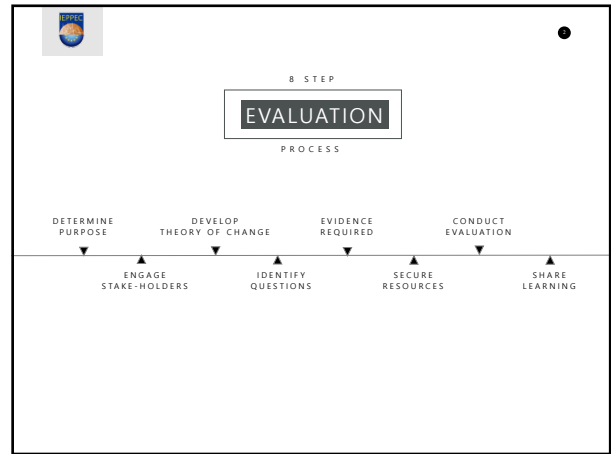


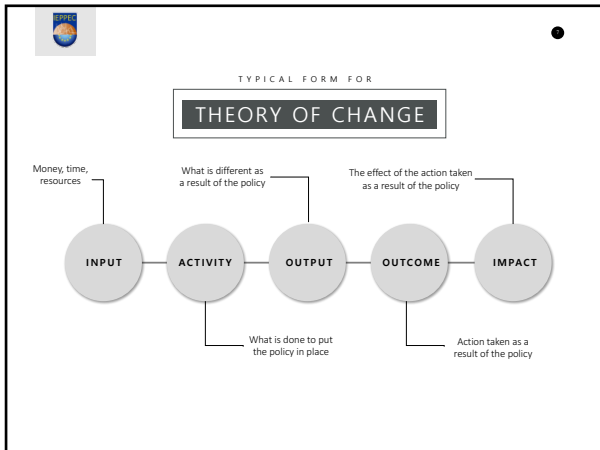


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EVERY STEP

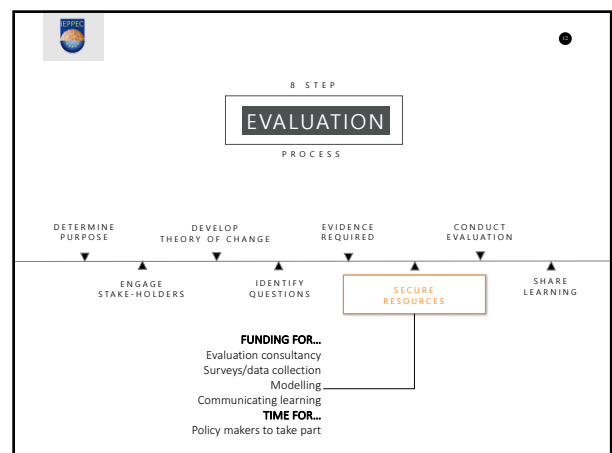
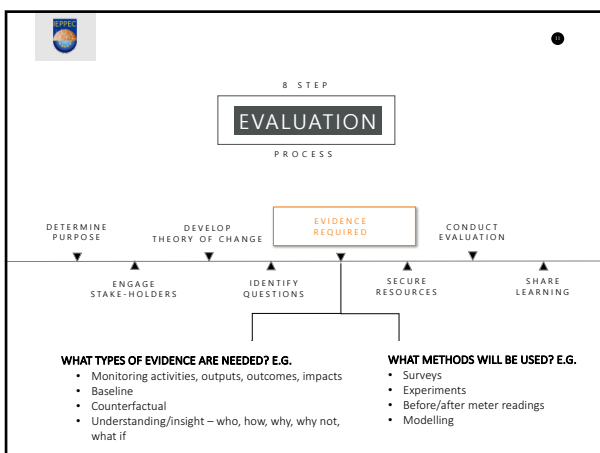
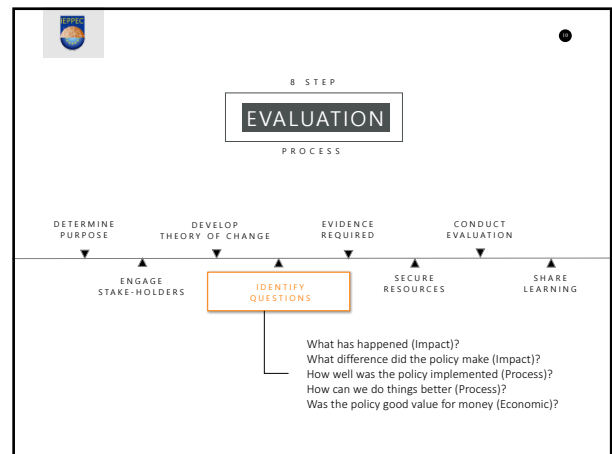
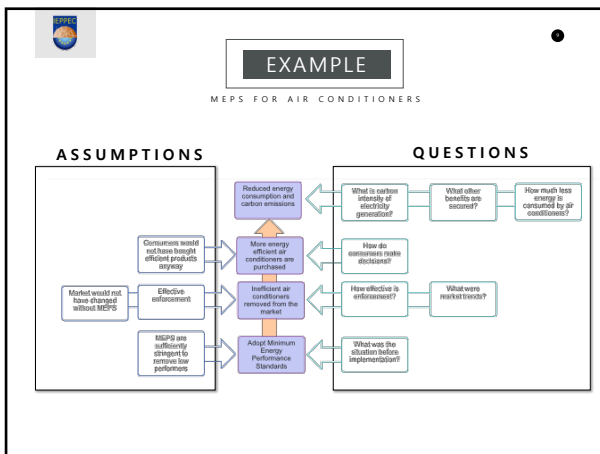
THINK ABOUT ...

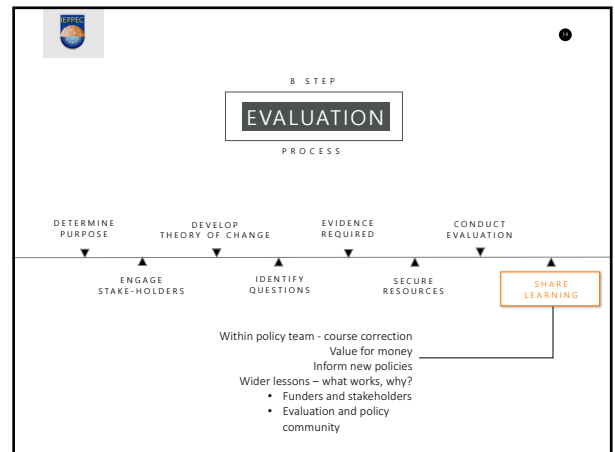
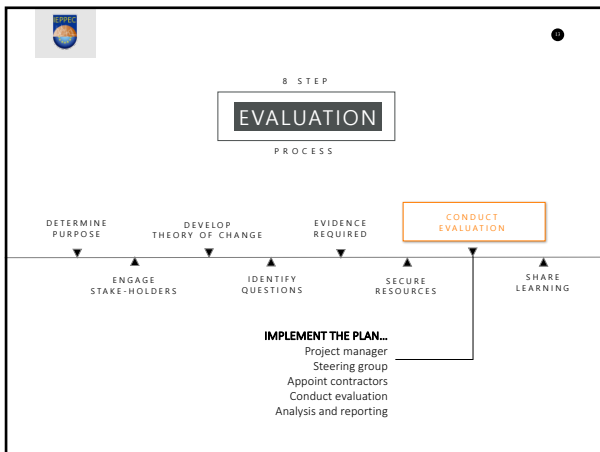
YOUR ASSUMPTIONS:

- ✓ Why do you expect the policy to work like this? What else might happen?
- ✓ Is the policy likely to work differently in different circumstances; e.g. for different people or in different places?
- ✓ What needs to be in place for the policy to work as you expect?
- ✓ What would have happened without the policy?

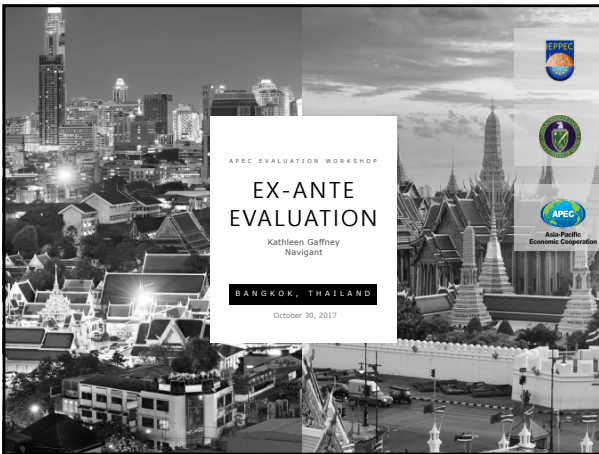
EVIDENCE:

- ✓ What evidence do you have to support the assumptions?
- ✓ What evidence do you need to enable you to test:
 - Whether the assumptions are right?
 - Whether the policy is working as you expected?
 - Where will you get the evidence you need?





CHARLES MICHAELIS
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EX-ANTE EVALUATION

Ex-ante means 'before the event'

Ex-ante evaluation is a tool for improving the quality of new or renewed programmes and for providing information on the basis of which decisions can be made

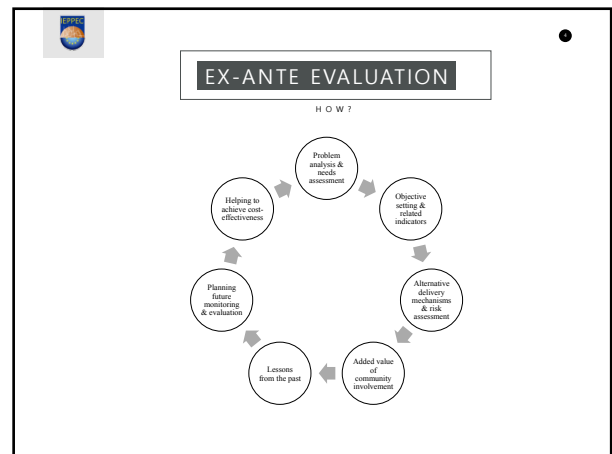
Other terms:

- Appraisal
- Policy analysis
- Impact assessment
- Feasibility study

EX-ANTE EVALUATION

WHEN, WHO, WHAT?

WHEN	WHO	WHAT
<ul style="list-style-type: none"> • Early • In parallel • Updated over time 	<ul style="list-style-type: none"> • In-house coordination • External experts 	<ul style="list-style-type: none"> • Pragmatic • Proportional • Learnings • Rationale



EX-ANTE EVALUATION

CHECKLIST (1 of 2)

Problem analysis and needs assessment	Objective setting	Alternative delivery mechanisms and risk assessment
<ul style="list-style-type: none"> • What is the problem to be solved and what are the main factors and actors involved? • What is the concrete target group and what are its needs and/or interests? 	<ul style="list-style-type: none"> • Have the general, specific and operational objectives been defined in terms of expected results? • What indicators are planned for measuring inputs, outputs, results and impacts? 	<ul style="list-style-type: none"> • What alternative instruments were considered and why was the proposed one chosen? • What risks are involved in the implementation of the intervention and what counter-measures have been taken?

EX-ANTE EVALUATION

CHECKLIST (2 of 2)

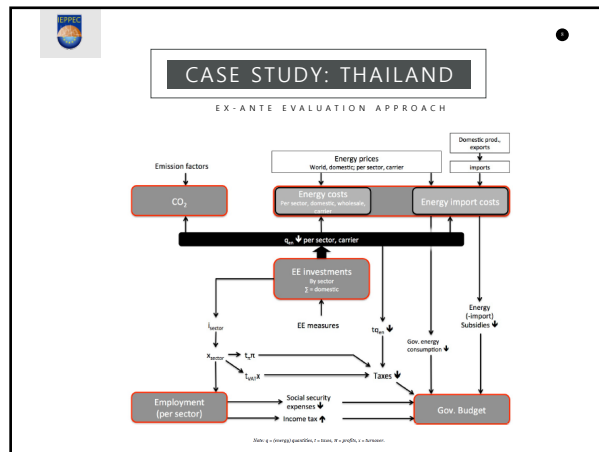
Added value of community involvement	Lessons learned from the past	Planning future monitoring & evaluation	Helping to achieve cost-effectiveness
<ul style="list-style-type: none"> • Is the proposed intervention complementary to and coherent with other interventions? • Does it produce synergies with them? 	<ul style="list-style-type: none"> • What evaluation, audit or study results/ experiences of similar actions are available? • How can these be applied to improve the design of the programme? 	<ul style="list-style-type: none"> • Are the proposed methods for collecting, storing and processing the relevant data sound? • Is the monitoring system fully operational already from the outset of the programme implementation? • What types of evaluations are needed and when should they be carried out? 	<ul style="list-style-type: none"> • What are the different cost implications of the proposed option? • Could the same results be achieved by a lower cost or could more or better results be achieved with the same cost by using different instruments?

CASE STUDY: THAILAND

EX-ANTE EVALUATION OF ECONOMY-WIDE BENEFITS OF 20-YEAR ENERGY EFFICIENCY ACTION PLAN (EEAP)

25% reduction in energy intensity
20% reduction in energy consumption (38 Mtoe)

2030 targets approved in 2011, updated in 2013



CASE STUDY: CALIFORNIA

KEEPING PACE: ONGOING EX-ANTE EVALUATION UPDATES FOR ENERGY EFFICIENT LIGHTING PROGRAMS

WHEN

- ✓ Late 1980s – present day

WHO

- ✓ California regulators, investor-owned utilities, other private market actors
- ✓ US and international standard setting agencies

WHAT

- ✓ Pragmatic
- ✓ Proportional
- ✓ Learnings
- ✓ Rationale

CASE STUDY: CALIFORNIA

KEEPING PACE: ONGOING EX-ANTE EVALUATION UPDATES FOR ENERGY EFFICIENT LIGHTING PROGRAMS

Standards, R&D	Supply	Demand
<ul style="list-style-type: none"> • Global • National • State / region • Emerging technology 	<ul style="list-style-type: none"> • Distribution • Stocking • Sale • Installation 	<ul style="list-style-type: none"> • Consumer preferences • Implementation barriers

Pragmatic: Program administrators & policy makers typically forecast the impacts from changes in standards over time depending on local, national or international trends

...this worked well in the early years when CFLs were being introduced, but fell behind as incandescent lamps were phased out / LEDs were introduced.

CASE STUDY: CALIFORNIA

KEEPING PACE: ONGOING EX-ANTE EVALUATION UPDATES FOR ENERGY EFFICIENT LIGHTING PROGRAMS

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<ul style="list-style-type: none"> • Global • National • State / region • Emerging technology 	<ul style="list-style-type: none"> • Distribution • Stocking • Sale • Installation 	<ul style="list-style-type: none"> • Consumer preferences • Implementation barriers

Proportional: Top down supply chain analysis had been sufficient to estimate market impacts

...however, as the scale & complexity of programs changed over time, detailed bottom up models were needed to understand the attribution of program-induced savings.

CASE STUDY: CALIFORNIA

KEEPING PACE: ONGOING EX-ANTE EVALUATION UPDATES FOR ENERGY EFFICIENT LIGHTING PROGRAMS

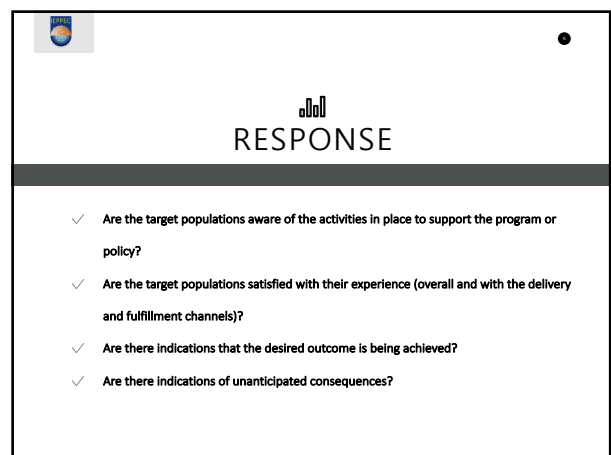
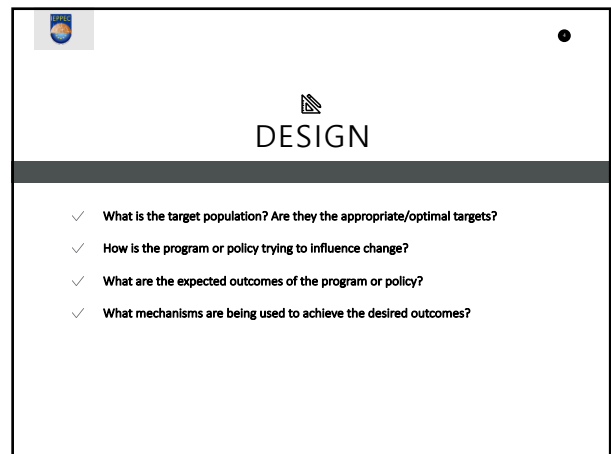
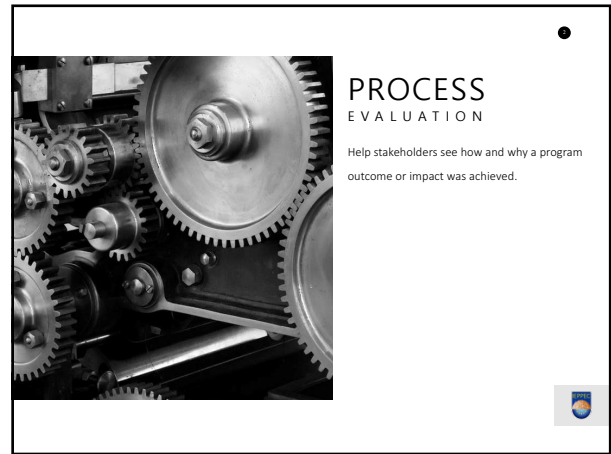
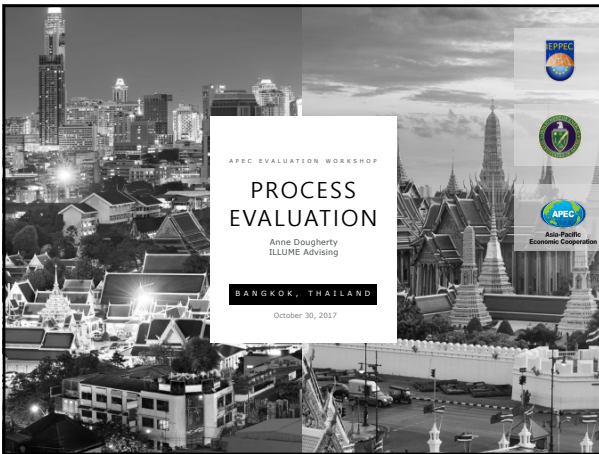
Standards, R&D	Supply	Demand
<ul style="list-style-type: none"> • Global • National • State / region • Emerging technology 	<ul style="list-style-type: none"> • Distribution • Stocking • Sale • Installation 	<ul style="list-style-type: none"> • Consumer preferences • Implementation barriers

Learnings & Rationale: Since the late 1980s, California program administrators and policy makers have updated ex-ante estimates of program impacts based on changes in standards, supply chain evolution and – ultimately – consumer preferences

...learnings which have not only helped improve overall program cost-effectiveness but have also provided rationale for continuous program design & implementation improvements.



A grayscale photograph of a city skyline, likely London, featuring the River Thames and the Tower Bridge. A white rectangular box is overlaid on the left side of the image, containing a circular profile picture of a woman, the name "KATHLEEN GAFFNEY", the email address "kathleen.gaffney@navigant.com", the website "www.iepec.org", and a small logo in the bottom left corner.



ARTICULATE & PRIORITIZE YOUR RESEARCH QUESTIONS

STEP ONE

QUESTIONS TO ASK:
What do we need to know to ensure our efforts are successful?

1

HVAC & WATER HEATING PROGRAM

EXAMPLE

PRIORITY QUESTIONS

- ✓ Is the program being implemented as designed?
- ✓ Are there "breaks" in the program process that are reducing the program's impact?
- ✓ How can the program achieve greater participation?
- ✓ Are participants satisfied with the program?
- ✓ Is participation resulting in the desired behavior change?

CHOOSE THE BEST RESEARCH TOOLS FOR YOUR QUESTIONS

STEP TWO

QUESTIONS TO ASK:
What is the best way to answer our questions?

2

COMMON DATE SOURCES FOR PROCESS EVALUATIONS

- ✓ Secondary data sources
- ✓ Observational research (ethnography)
- ✓ Implementer and market actor in-depth interviews
- ✓ Participant in-depth interviews
- ✓ Population surveys

HVAC & WATER HEATING PROGRAM

EXAMPLE

RESEARCH TOOLS USED

- ✓ Secondary data review:
 - Program plans
 - Past evaluation findings
 - Customer satisfaction ratings
 - Program database reviews
- ✓ Program funder interviews
- ✓ Program implementer interviews
- ✓ HVAC contractor focus groups
- ✓ HVAC program participant focus groups

HVAC & WATER HEATING PROGRAM

EXAMPLE

Stages colored by entity "hosting" action (default to blue if multiple parties)

- Customer process (even if it involves other actors)
- Program process (not customer-facing)
- Trade ally/contractor initiated process
- Repeated process

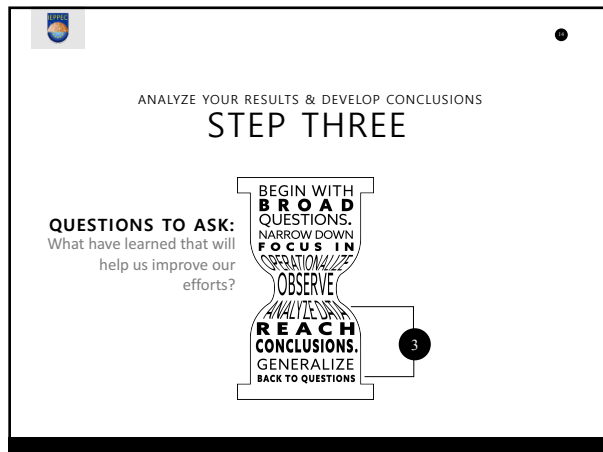
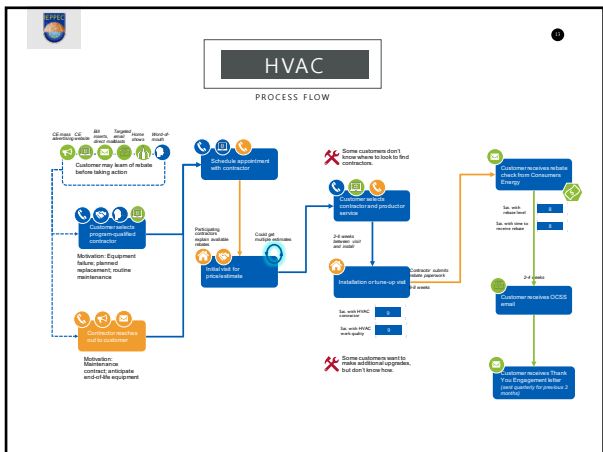
Touchpoints and Outputs colored by entity initiating or hosting communication

- Customer-initiated touchpoint
- Program-initiated or program-supported touchpoint
- Program-generated output
- Trade ally-initiated or trade ally-supported touchpoint
- Trade ally-generated output
- Pain point/opportunity

Arrows colored by the entity driving progress to the next step

- 2015 YTD rating in Ongoing Cust. Sat. Surveys

- Mass media advertising
- Direct mail / bill inserts
- Website
- Email
- Word-of-mouth
- Letter/materials delivered in-person (e.g. leave-behind letter)
- Phone
- Home visit
- In-person communication (with contractor or sales associate)
- Delivery
- Retail
- Event / trade show



HVAC & WATER HEATING PROGRAM EXAMPLE

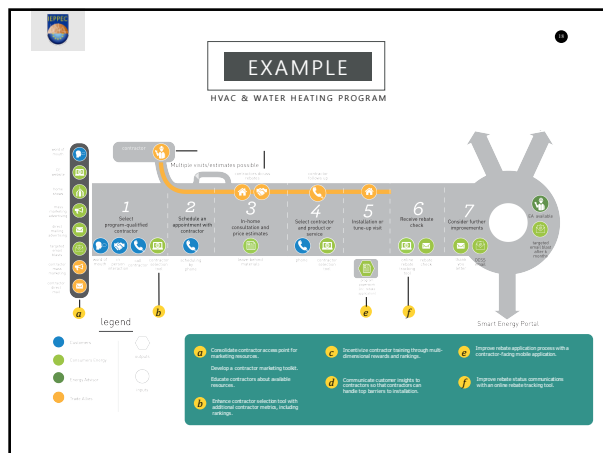
- ✓ Is the program being implemented as designed?
Most of the time.
- ✓ Are there "breaks" in the program process that are reducing the program's impact?
Yes, at these key points: contractor selection, referrals to more home upgrades, and participant training after installation.
- ✓ How can the program achieve greater participation?
Improve contractor selection tools, provide more co-operative marketing dollars, refine the contract scheduling process.
- ✓ Are participants satisfied with the program?
Yes
- ✓ Is participation resulting in the desired behavior change?
Most of the time, however thermostat behavior can be improved.



EXAMPLE

HVAC & WATER HEATING PROGRAM: FUTURE STATE AND GAP ANALYSIS

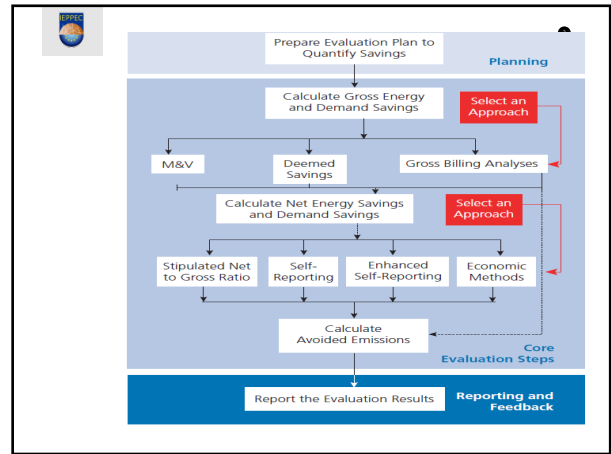
FUTURE STATE ITEM	RECOMMENDATION	TOUCHPOINT	IMPACT ON CUSTOMER EXPERIENCE	EASE OF IMPLEMENTATION	INITIATIVE UNDERWAY?	PRIORITY LEVEL
a (1)	Consolidate contractor access point for marketing resources.	Trade ally website; contractor resources on trade ally website	Medium	Easy	Yes	Easy win
a (2)	Develop a contractor marketing toolkit.	Trade ally website	Medium	Easy	Yes	Easy win
a (3)	Educate contractors about available resources.	Trade ally website	Medium	Easy	Yes	Easy win
b	Enhance contractor selection tool with additional contractor metrics, including rankings.	Contractor selection tool	Medium	Moderate	Yes	Long-term planning
c	Incentivize contractor training through multi-dimensional rewards and rankings.	Contractor selection tool	Medium	Moderate	No	Long-term planning
d	Communicate customer insights to contractors so that contractors can handle top barriers to installation.	Contractor communications (website and email)	Medium	Easy	No	Easy win
e	Improve rebate application process with a contractor-facing mobile application.	Mobile application	Low	Moderate	Yes	Easy win
f	Improve rebate status communications with an online rebate tracking tool.	Online rebate tracking tool	Medium	Moderate	No	Long-term planning





A professional card for Anne Dougherty, split into two vertical panels. The left panel is white and contains a small portrait of Anne Dougherty, her name 'ANNE DOUGHERTY', the company name 'ILLUME Advising', her email 'anne@illumeadvising.com', and a small logo at the bottom left. The right panel is a black and white photograph of a desert landscape with several saguaro cacti and a bright sun low on the horizon, creating a lens flare effect.


ANNE DOUGHERTY
ILLUME Advising
anne@illumeadvising.com

Option A Retrofit Isolation— Key Parameter Measurement	Option B Retrofit Isolation— All Parameters Measurement	Option C Whole Facility	Option D Calibrated Simulation
is best applied where:	is best applied where:	is best applied where:	is best applied where:
<ul style="list-style-type: none"> The magnitude of savings is low for the entire project or for the portion of the project to which Option A is applied The project is simple, with limited independent variables and unknowns The risk of not achieving savings is low Interactive effects are to be ignored or are stipulated using estimating methods 	<ul style="list-style-type: none"> The project involves simple equipment replacements Energy savings values per individual measure are desired Interactive effects are to be ignored or are stipulated using estimating methods Independent variables are not complex 	<ul style="list-style-type: none"> The project is complex Predicted savings are large (typically greater than 10%) compared to the recorded energy use Energy savings values per individual measure are not needed Interactive effects are to be included Independent variables that affect energy use are not complex or excessively difficult to monitor 	<ul style="list-style-type: none"> New construction projects are involved Energy savings values per measure are desired Option C tools cannot cost-effectively evaluate particular measures Complex baseline adjustments are anticipated Baseline measurement data do not exist or are prohibitively expensive to collect

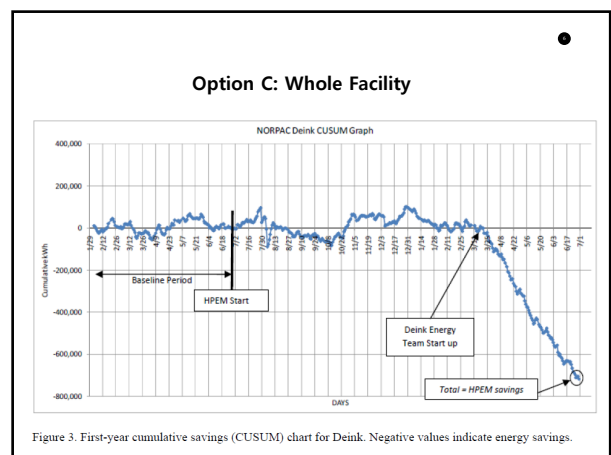
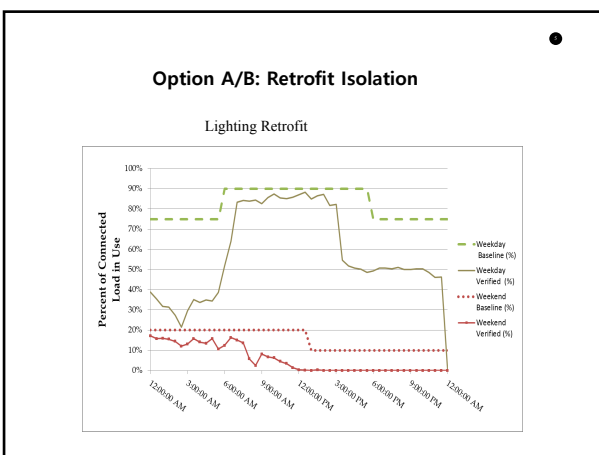


Figure 3. First-year cumulative savings (CUSUM) chart for Deink. Negative values indicate energy savings.

Option C: Whole Facility 5 Years

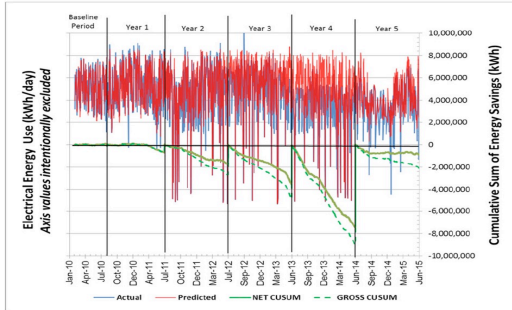


Figure 4. Deink predicted and actual energy use (scale intentionally excluded) and CUSUM over the five-year HPEM period

Option D: Simulation Savings Methodology

Parametric Runs for Energy Savings Simulations and Analysis

Run	Name	Rebated Measures	All Other Measures	Operating Schedule	Occupancy Level	Weather Data
Billing Reconciliation						
1.	Model Calibration	As Built	As Built	Actual	Current	Actual
Estimates of Energy Use (for calculating savings)						
2.	As Built	As Built	As Built	Actual	100%	TMY
3.	Expected Meas.	Application	As Built	Actual	100%	TMY
4.	Measure Base	Per Code	As Built	Actual	100%	TMY
5.	Whole Bldg Base	Per Code	Per Code	Actual	100%	TMY

Definitions of Savings Calculations

	Savings to Be Calculated	How Calculated
A	Total Achieved Savings	Difference between results of 2 and 5
B	Non-rebated Measure Savings	Difference between results of 4 and 5
C	Rebated Measure Savings	Difference between results of 2 and 4
D	Expected Measure Savings	Difference between results of 3 and 4

DEEMED SAVINGS

Deemed Savings: Appliance Standards Impact Evaluation Framework

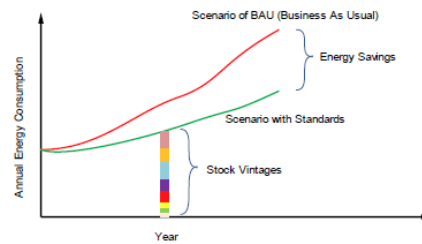
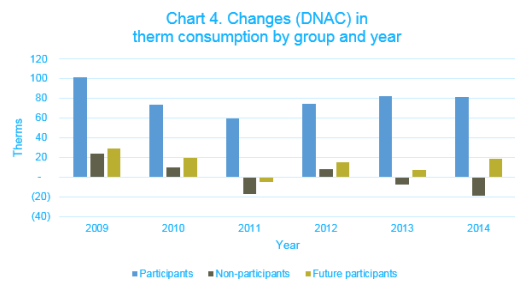


Figure 1. Framework of the Evaluation Methodology

BILLING ANALYSIS

Example 1: Six-Year Ceiling Insulation Gas Savings






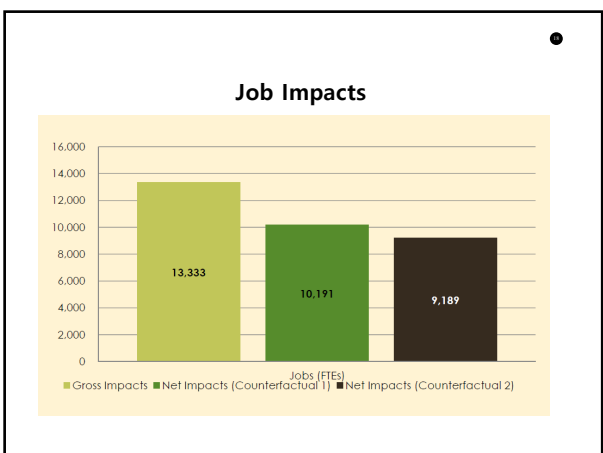
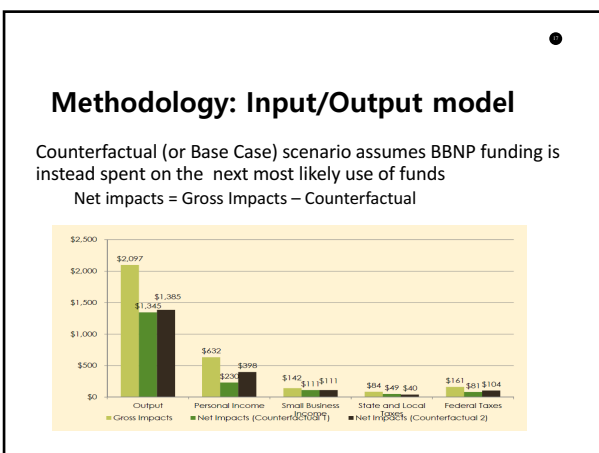
Sampling

- It is usually not feasible to use the total participant population because of time and budget and other constraints
- A sample of the population is used to make inferences about the whole population
- The goal of sampling is to collect data that are representative of the entire population and/or subpopulations of interest
- Wide range of approaches (e.g. random, stratified etc.)

Stratified Sampling of a Industrial Program



Track	Electric			Gas		
	Population Size (Measures)	Sample Size (Measures)	Projected Precision @ 90% Confidence	Population Size (Measures)	Sample Size (Measures)	Projected Precision @ 90% Confidence
Custom Capital	116	60	5%	11	8	8%
Custom O&M	23	8	19%	8	3	30%
Green Motor	89	17	16%	-	-	N/A
Resins	1,666	121	7%	-	-	N/A
Prescriptive	596	39	12%	27	7	23%
SEM	21	17	4%	3	3	0%
Streamlined	135	11	23%	4	1	62%
Total	2,646	273	4%	53	22	10%





Program Example: 2013-2014 Existing Buildings impact evaluation

Goals:

- To estimate 2013 and 2014 gas and electric realization rates to be used in True-Up
- To obtain feedback about reasons why savings were higher or lower than expected

Methods:

- Document and data review, site visits, engineering analysis (IPMVP Options A, B, C and D)

Key findings

Program Year	Gas (%)	Electric (%)
2008	95%	85%
2009	85%	75%
2010	100%	85%
2011	95%	95%
2012	90%	75%
2013	85%	85%
2014	85%	75%

Program Impact: Implement “sanity checks” for custom track projects and update lighting calculator. May need to re-look at practices related to how Energy Trust treats heating and cooling interaction factors (HCIFs). The evaluator also suggested conducting evaluation closer to the time of implementation.

Program Example: heat pump control pilot evaluation

Goals:

- To estimate energy savings from heat pump controls (and determine which features save energy), and understand customer use of, and satisfaction with, the thermostat controls

Methods:

- Interviews with program staff, customer surveys, billing analysis

Key findings

780 kWh / year savings (93% realization rate) ~ 12% of heating load

Satisfaction with Nest Thermostat

- Survey 1 (n=108)
- Survey 2 (n=83)

Satisfaction Rating	Survey 1 (%)	Survey 2 (%)
1 - Completely Unsatisfied	~5%	~5%
2	~5%	~5%
3	~15%	~10%
4	~30%	~25%
5 - Completely Satisfied	~45%	~55%


Program Impact: The Existing Homes program used this information to develop and implement a thermostat offering.

Program example: AC Thermostat demand control


Table 7 - Summary Impact Evaluation Results (Total kW - Average Curtailment day)


Vendor	Strategy	Unit Count	Pre Curtail Hour	Hour 1 (Curtail)	Hour 2 (Curtail)	Hour 3 (Post)	Hour 4 (Post)
Ecobee	4° Setback	28		23	21	-5	-2
	Cycling 50%	28		10	-3	-30	-25
EnergyHub	4° Setback	145		209	160	-83	-64
	4° Setback w/2° Precool	145	-19	235	144	-96	-77
Nest	4° Setback w/2° Precool	2653	-1,008	3,316	2,918	-796	-451

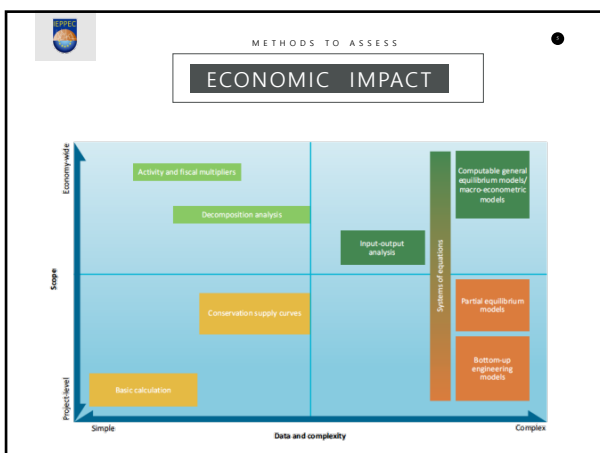
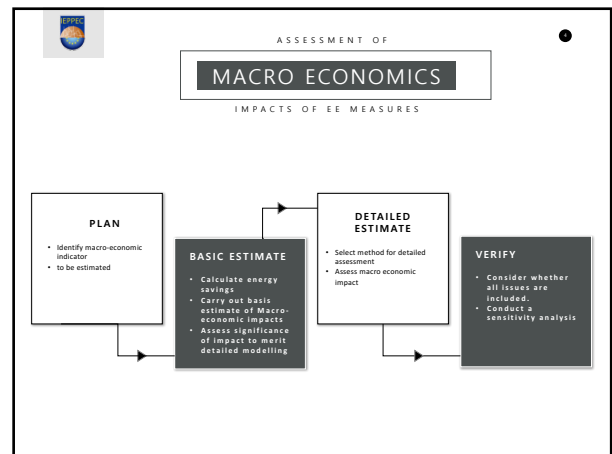
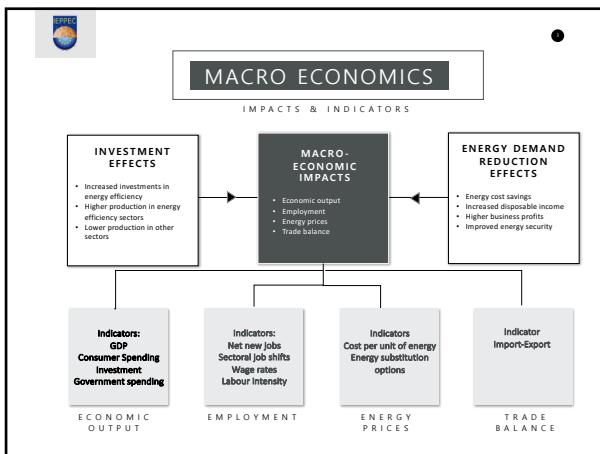
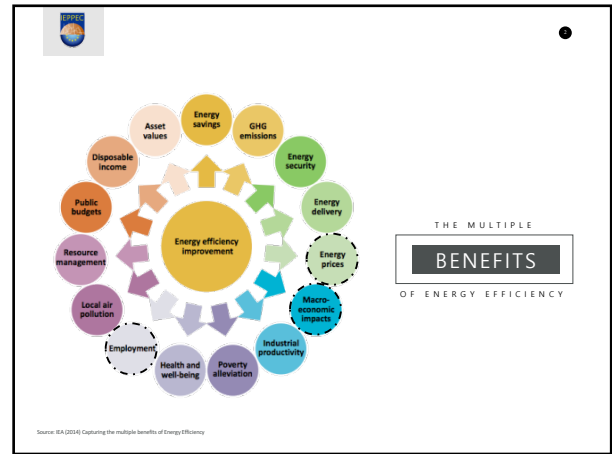




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EXAMPLE

Input/Output analysis

WHAT

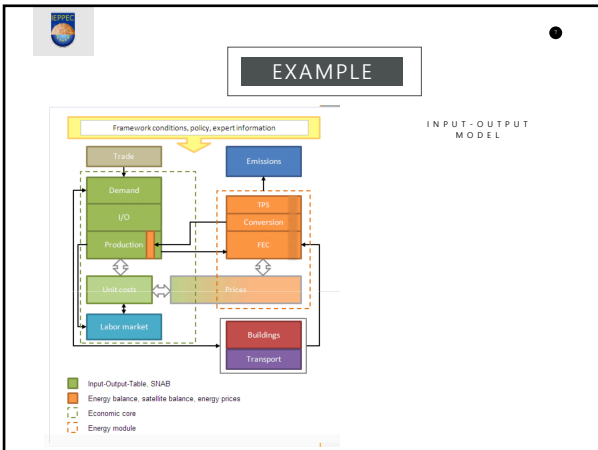
- assessing economy wide impacts of energy efficiency policies in Germany

WHY

- provide information on potential economic benefits of energy efficiency policies as input for the political debate on further tightening of these policies

FOR WHOM

- Policy makers and politician on the national level




EXAMPLE

RESULTS


Efficiency-Ref	Absolute values					Percentage difference				
	2011	2014	2016	2018	2020	2011	2014	2016	2018	2020
Difference in bil. Euro										
GDP components	6.4	8.8	12.8	15.2	17.8	0.3	0.4	0.5	0.6	0.7
GDP	2.0	4.7	6.6	8.5	10.6	0.2	0.4	0.5	0.7	0.8
Private consumption	0.1	-0.1	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0
Govt consumption	3.6	3.6	4.2	4.7	5.7	1.4	1.3	1.5	1.7	1.9
Investment	3.0	3.1	5.1	5.2	5.1	1.4	1.4	2.4	2.5	2.5
Buildings	0.1	0.3	0.4	0.4	0.5	0.0	0.0	0.0	0.0	0.0
Exports	2.4	2.7	3.3	3.5	3.9	0.2	0.2	0.3	0.3	0.3
Imports	Difference in percentage points									
Private consumption	-0.04	-0.10	-0.14	-0.18	-0.22	-0.04	-0.08	-0.12	-0.15	-0.18
Production	-0.05	-0.06	-0.07	-0.07	-0.07	-0.05	-0.05	-0.06	-0.06	-0.06
Imports	-0.07	-0.16	-0.23	-0.30	-0.39	-0.07	-0.16	-0.22	-0.29	-0.36
Labor market	Absolute difference									
Employment	67	79	110	120	128	0.2	0.2	0.3	0.3	0.3

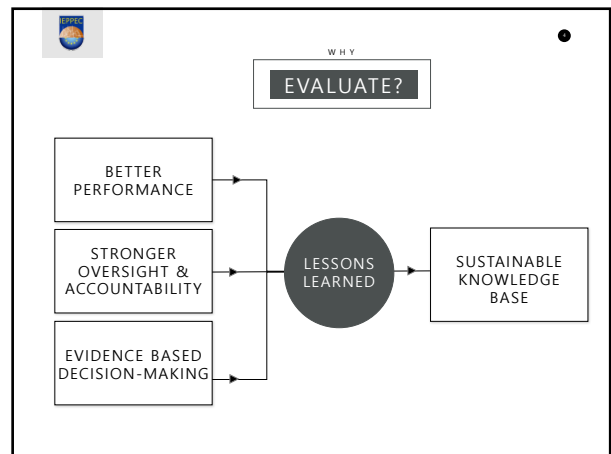
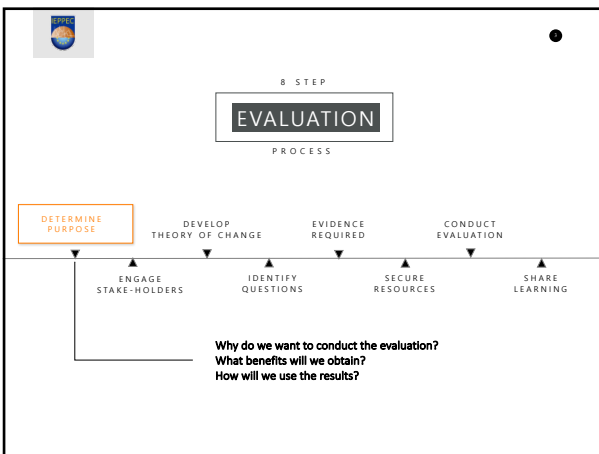
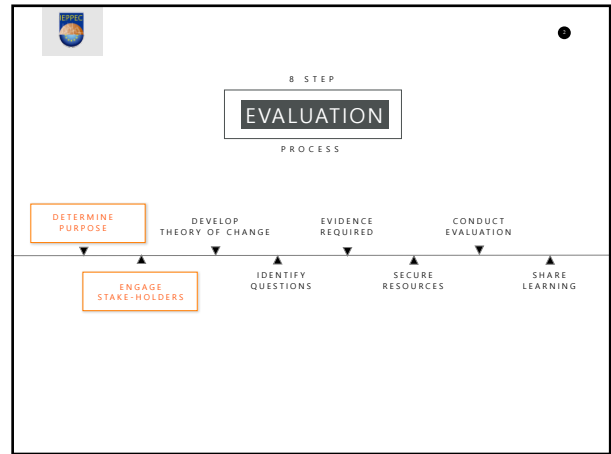
- EXAMPLE**
- RESULTS: TYPICAL CONCLUSIONS
- ✓ **HIGHER GDP AND MORE JOBS (+127.000 IN 2030)**
 - ✓ Additional investment yields additional production and therefore additional employment,
 - ✓ Energy is replaced by capital,
 - ✓ Imports (e.g. crude oil, gas) are replaced by domestic value added,
 - ✓ Energy efficiency improves economic productivity and thus competitiveness on fast growing markets,





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“

The main purposes of evaluation are to **improve future aid policy, programmes and projects** through feedback of lessons learned; to provide a basis for **accountability**, including the provision of information to the public. This accountability notion relates to the **developmental results and impact of development assistance** (as distinct from accountability for the use of public funds in an accounting and legal sense). Evaluation also brings to the attention of policy-makers constraints on developmental aid success resulting from policy shortcomings or rigidities **both on the donor and recipient side**, and promotes dialogue and improved co-operation between the participants in the development process through **mutual sharing of experiences at all levels.**

”

WHY EVALUATE? OECD PERSPECTIVE

- Learn from experience
- Transparency
- Deepening understanding
- Improved communication

OECD, Principles for Evaluation of Development Assistance
http://www.oecd.org/dac/evaluation/50584880.pdf

“

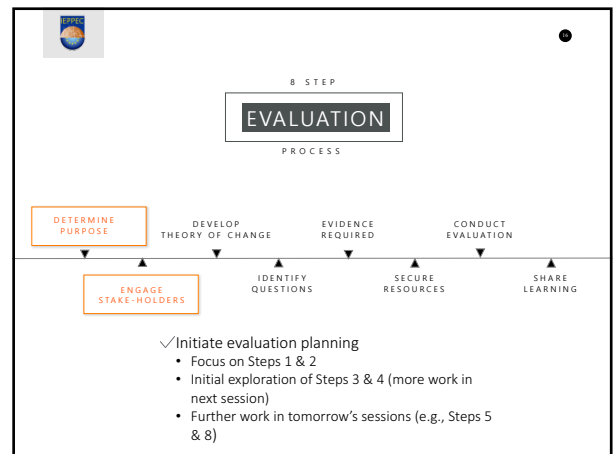
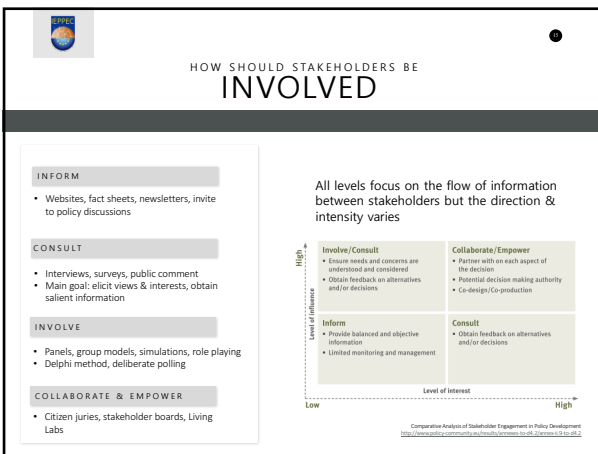
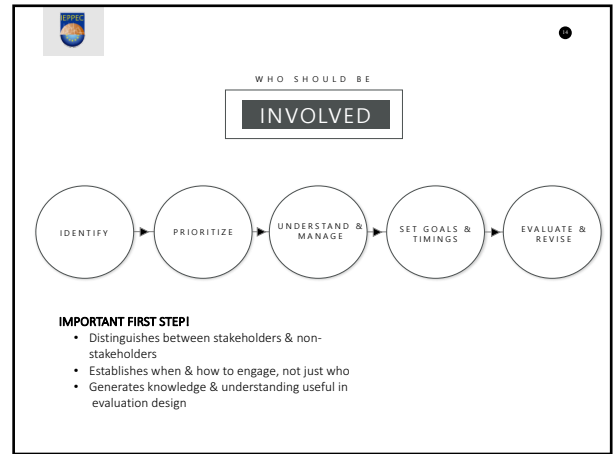
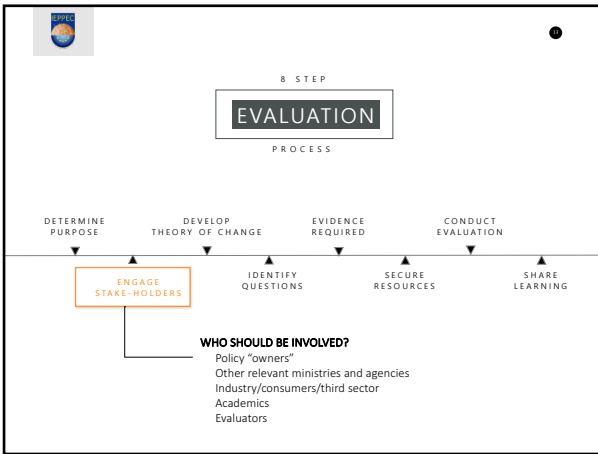
Evaluations gather evidence to **assess how a specific intervention has performed** (or is working), taking account of earlier predictions made in the context of an impact assessment and **whether there were unintended / unexpected effects** anticipated by the impact assessment or the act agreed by the government. An evaluation also draws conclusions on **whether the intervention continues to be justified** or should be modified to improve its effectiveness, relevance and coherence and/or to eliminate excessive burdens or inconsistencies or simply be repealed.

”

WHY EVALUATE? EU PERSPECTIVE

- Provide timely and relevant advice to decision-making / political priority setting
- Foster 'organisational learning' (sharing good practices)
- Provide transparency & accountability
- Ensure efficient resource allocation

European Commission, Better Regulation Guidelines
https://ec.europa.eu/info/files/better-regulation-guidelines-better-regulation-commission_en



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APEC EVALUATION WORKSHOP

DEVELOP THEORY OF CHANGE AND IDENTIFY EVALUATION QUESTIONS AND INDICATORS

Mirjam Harmelink
Harmelink Consulting

BANGKOK, THAILAND
October 30, 2017

ESPEC
APEC
Asia-Pacific Economic Cooperation

3RD STEP IN THE

EVALUATION

PROCESS

DETERMINE PURPOSE → **DEVELOP THEORY OF CHANGE** → EVIDENCE REQUIRED → CONDUCT EVALUATION

ENGAGE STAKE-HOLDERS → IDENTIFY QUESTIONS → SECURE RESOURCES → SHARE LEARNING

DESCRIPTION OF:
Policy objectives
How the policy is intended to secure the objectives
Main processes
Key assumptions

THEORY OF CHANGE IN THE

POLICY

CYCLE

NEEDS, PROBLEMS, ISSUES
e.g. climate change mitigation

POSSIBLE REFORMULATION/ REORGANIZATION OF POLICIES/PROGRAM

IMPACTS
e.g. reduction of CO2 emissions

PROGRAM MONITORING & EVALUATION

THEORY OF CHANGE → OPERATIONAL MODEL (INDICATORS) → PROGRAM OUTCOMES
e.g. reduced energy use

POLICY OBJECTIVES
e.g. reduce carbon emission by x%

PROGRAM OBJECTIVES
e.g. reduce energy use by x% or improve energy efficiency by x%

PROGRAM INPUTS → PROGRAM OUTPUTS

WHY IS THEORY OF CHANGE

USEFUL

COMMUNICATE

- What you are aiming to achieve and how
- Assumptions
- Key steps

IDENTIFY

- Monitoring indicators
- Evaluation questions

ALIGN

evidence from different sources

THEORY OF CHANGE IN THE

LOGIC MODEL

CAUSE-IMPACT CHAIN

OPERATIONAL MODEL (INDICATORS)

ASSUMPTIONS

EVALUATION QUESTIONS

INPUTS → ACTIVITIES → OUTPUTS → TARGET GROUP(S) → SHORT-TERM AND INTERMEDIATE-TERM OUTCOMES → LONG-TERM OUTCOMES

INDICATOR NO. 1
INDICATOR NO. 2

INDICATOR NO. 3
INDICATOR NO. 4

INDICATOR NO. 5
INDICATOR NO. 6

INDICATOR NO. 9
INDICATOR NO. 10

INDICATOR NO. 11
INDICATOR NO. 12


EVERY STEP
YOU THINK ABOUT ...

YOUR ASSUMPTIONS:

- Why do you expect the policy to work like this? What else might happen?
- Is the policy likely to work differently in different circumstances; e.g. for different people or in different places?
- What needs to be in place for the policy to work as you expect?
- What would have happened without the policy?

EVIDENCE:



- What evidence do you have to support the assumptions?
- What evidence do you need to enable you to test?
- Whether the assumptions are right?
- Whether the policy is working as you expected?
- Where will you get the evidence you need?





TASK

DEVELOP A THEORY OF CHANGE FOR THE YOUR PROGRAM/POLICY INSTRUMENT

- ✓ Describe the different steps in a logical model
- ✓ Describe your assumptions
- ✓ Identify your evaluation questions
- ✓ Identify your indicators



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TYPES OF DATA

- **Qualitative:** data deals with characteristics and descriptors that can't be easily measured, but can be observed subjectively (e.g. satisfaction)
- **Quantitative:** deals with numbers and things you can measure objectively
- **Primary:** data collected by the researcher
- **Secondary:** data collected by others
- **Micro:** Individual data (person, building ,firm, household, motor, light bulb)
- **Macro:** aggregated data or system-level data

PRIMARY DATA COLLECTION METHODS

- **Surveys:**
 - Phone: voice
 - Phone: text
 - Mail
 - Internet (on-line and email)
 - Intercept (In-person)
 - Paper (e.g. handed out at trainings, events...)
- **Interviews:** one-on-one, group, focus group, Delphi
- **Observation:** ride-alongs, attending meetings,.....
- **Site visits:** observations
- **Measurement:** lab-testing, metering (on-site and remote) and sub-metering, website traffic
- **Other** (e.g. aerial photography)

SOURCES OF DATA SECONDARY

- **Program data:** participation databases, budgets and internal and external reports and communications, trade ally lists, implementation manual, forms, measures installed, cost of installation.....
- **Utility data:** nonparticipants, energy consumption and load.....
- **Public data:** Census, National accounts, building permits, weather.....
- **Commercial databases:** InfoUSA, Costar, Experian.....

DATA COLLECTION MANAGEMENT

- **Cost:** In the case of primary data the cost of collecting data can be quite high. Even free data is not free. Need data system infrastructure, to manage and analyze the data and the collection of the data (software, hardware, people, security...).
- **Availability:** Primary data collection might be needed and this has costs. Secondary data might be available but one might not be able to get access to it needs to be purchased. Sometimes data is available but does not fit in to the evaluation schedule
- **Access:** The data may exist but one is not allowed to access it (e.g. census micro data), industrial customer site, manufacturer sales data etc.)
- **Confidentiality:** Some data is confidential and must be kept that way. This tends to increase the costs to the data infrastructure or in some cases people are not allowed to even access this data due to NDA issues

RESEARCH FRAMEWORK PRIMARY & SECONDARY

- **Research design/plan**
 - Evaluation Questions
 - Research Strategy
 - Sampling plan
 - Primary data collection
 - Secondary data collection
- **Analysis plan**
- **Resources:**
 - Secondary data currently available

Evaluation Questions and Data
Collection and Analysis

EXAMPLES

- **What are the annual kWh savings achieved by an industrial program at a precision of $\pm 10\%$ at a 90 confidence level ?**
 Select representative sample of participant sites. Select appropriate IPMVP method(s) and estimate savings for each of the sampled sites. Use sample weighting to obtain program level savings
- **What is the market penetration of LEDs?**
 Triangulate the results of site visits of a sample of homes that collect lighting socket level data, in-store visits of a representative sample of retailers to collect data on lighting products for sale, interviews with a representative sample of retailers and distributors and types of lighting product sold, national sales statistics, and interviews with a sample of manufacturers.
- **Why are certain customer classes are not participating in energy efficiency programs?**
 Select a stratified sample of participants and non participants that are representative of specific customer classes. Survey this sample to ascertain awareness and knowledge of program and interest in program. Query respondents on participation decision and drivers and barriers to participation.

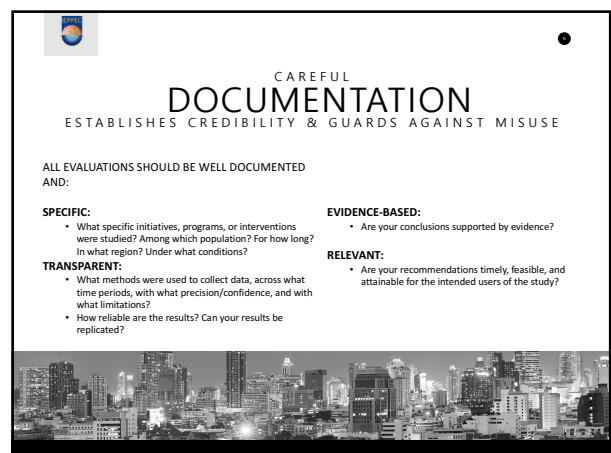
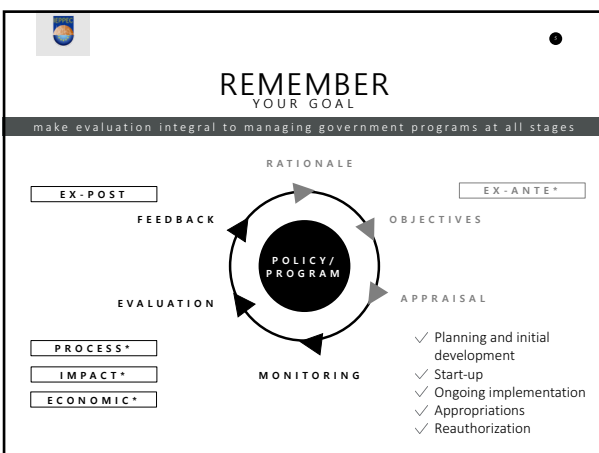
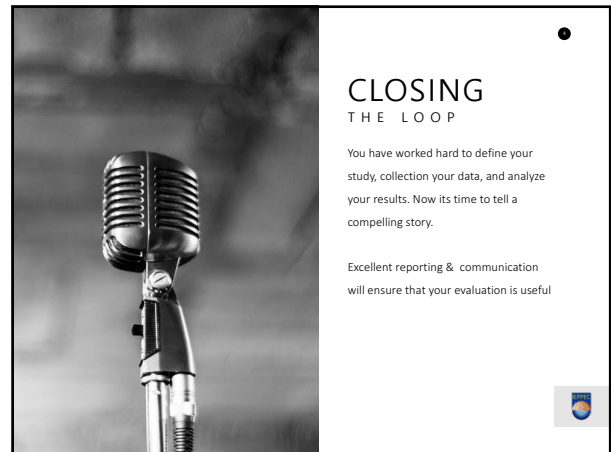
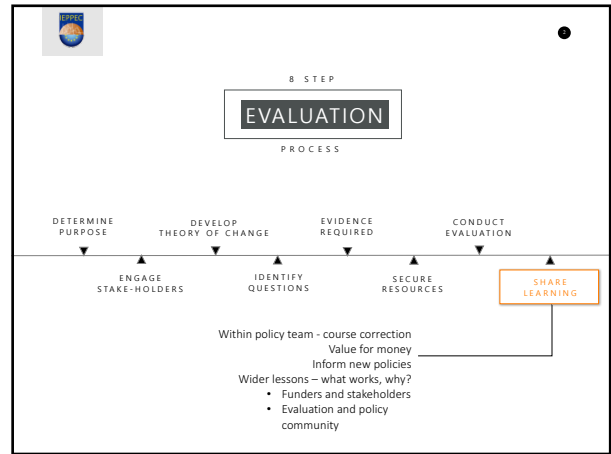
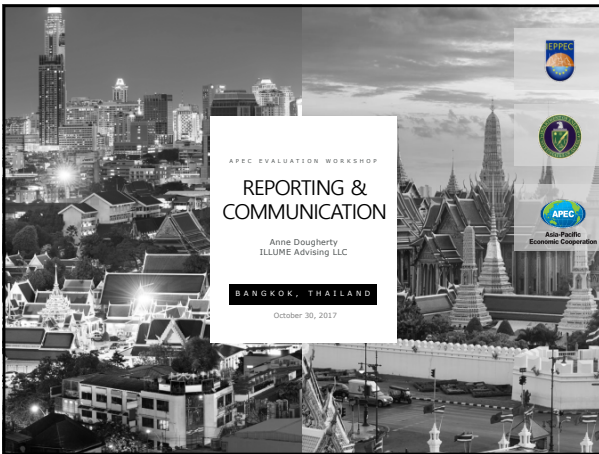
Evaluation Questions and Data
Collection and Analysis


EXAMPLES

- **What are the savings from a residential HVAC program?**
 Estimate residential HVAC savings with a pre/post billing analysis and a quasi-experimental design. This will include having the estimates of a nonparticipant comparison group that is compared to the participant group with a difference of differences analysis.
- **What is the awareness of a residential program?**
 Estimate program awareness using a telephone survey. A representative sample of participants and nonparticipants are surveyed and asked both unassisted and assisted program awareness questions. The answers will be used to ascertain program awareness.
- **What are the implementation costs and kW savings of a residential thermostat control program?**
 Estimate residential HVAC savings with a pre/post billing analysis and a quasi-experimental design. This will include having the estimates of a nonparticipant comparison group that is compared to the participant group with a difference of differences analysis.



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DEFINE YOUR AUDIENCE AND COMMUNICATE FOR SUCCESS

All communications must consider the needs of your stakeholders.

Before writing your report, consider:


- ✓ Who are your stakeholders?
- ✓ How much time and attention do they have?
- ✓ What level of detail are they willing and able to absorb?
- ✓ What specific details do your stakeholders require from you?

EGAT EXAMPLE

RECOMMENDED WAYS TO COMMUNICATE TO AUDIENCES


make evaluation integral to managing government programs at all stages

- ▶ Disseminate results through informal meetings, oral briefings, and media presentations
- ▶ Create and distribute a monthly tracking report
- ▶ Write final reports with brief and nontechnical executive summaries
- ▶ Involve third parties (professional organizations) to help disseminate results
- ▶ Circulate results to other researchers and people interested in the issue


NOW, FOR YOU TO CONSIDER

- ✓ Who did you identify as your stakeholders?
 - What are their expectations of you?
- ✓ What "life" do you want your evaluation to have? How do you want the results to be used?
- ✓ How will you communicate your results to best support them?
- ✓ Who will you enlist to support you?
- ✓ What will you include in your report to establish credibility and guard against misuse?



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APEC EVALUATION WORKSHOP
NEXT STEPS
 Edward Vine
 Lawrence Berkeley National
 Laboratory
BANGKOK, THAILAND
 October 30, 2017

IEPEEC
 Asia-Pacific
 Economic Cooperation




AFTER
 THIS WORKSHOP

This workshop is a step in a long-term effort in developing an evaluation community in their countries


Expectation: conference participants will return to their countries as "evaluation seeds" and provide the following services, where appropriate:

- ✓ annual conference or formal meeting
- ✓ seminars or informal meetings
- ✓ **Training:** workshops, on-the-job professional education & training programs, and training of Trainers
- ✓ website
- ✓ resource library
- ✓ newsletter or e-news broadcast


AFTER
 THIS WORKSHOP

- ✓ e-conference
- ✓ networking communication facility (e.g. e-forums / listserv/ social media)
- ✓ thematic or regional groups for collaborations on policy and for conducting regular meetings
- ✓ linkages with other evaluation groups (create topical subgroups on energy efficiency)
- ✓ evaluators database or directory
- ✓ employment opportunity posting or job bank
- ✓ internet hosting (e.g. web space, email server)




AFTER
 THIS WORKSHOP

- ✓ advocacy to government for better policy environment & more resources for training and evaluation
- ✓ evaluation consulting services
- ✓ scholarships or travel grants
- ✓ competitions & awards
- ✓ evaluation guidelines or standards or ethical codes
- ✓ qualified editorial activity (e.g. refereed journal)
- ✓ evaluation needs assessment
- ✓ formal connection with IEPEEC and IEPEC, to support one or more above activities




AFTER
 THIS WORKSHOP

- ✓ practical missions and assignment on energy efficiency evaluation
- ✓ national exam to recruit experts on energy efficiency evaluation
- ✓ encourage donors to require an evaluation report as part of proposal development by applicants




EVALUATION SEEDS

We are looking for more "evaluation seeds" (supporters) for developing an evaluation community/network in Asia – if interested, contact:

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