ENERGY MARKET AUTHORITY

Smart Energy, Sustainable Future

Singapore–IEA Training Programme on Green Buildings

Tracing the path to low-emission, efficient and resilient buildings and construction

16 – 18 July 2019

Orchard Hotel

442 Orchard Rd., Singapore

#energyefficientworld

About the Singapore - IEA Regional Training Hub

The Singapore-IEA Regional Training Programme on Green Buildings in Singapore is the third activity under the Singapore-IEA Regional Training Hub. Launched in October 2016, the Singapore-IEA Regional Training Hub held the first ever Southeast Asia Energy Efficiency Training Week in 2017 and launched the Singapore-IEA Clean Energy Investment and Financing Training Programme in 2018. The Hub taps into Singapore's location at the heart of Southeast Asia and provides Asia with greater access to IEA's training and expertise, and capitalises on existing synergies between Singapore and the IEA to co-create capacity building programmes based on the evolving needs of the region.

About the IEA

The IEA works to ensure secure, affordable and sustainable energy globally. Our work on energy efficiency in emerging economies (E4) forms part of the IEA Clean Energy Transitions Programme (CETP), which aims to collaborate with target country governments on all aspects of their clean energy transitions with support from a range of donors including Canada, Denmark, the European Commission, Germany, Italy, Japan, Sweden, Switzerland, and the United Kingdom.

The E4 Programme collaborates on energy efficiency with six of the largest energy consuming emerging economies, namely Brazil, China, India, Indonesia, Mexico and South Africa and within two regions, ASEAN and Latin America, supporting energy efficiency through established political and trading relationships.

The collaboration in these countries and within these regions is highly flexible, based on changing needs, but falls into three main themes:

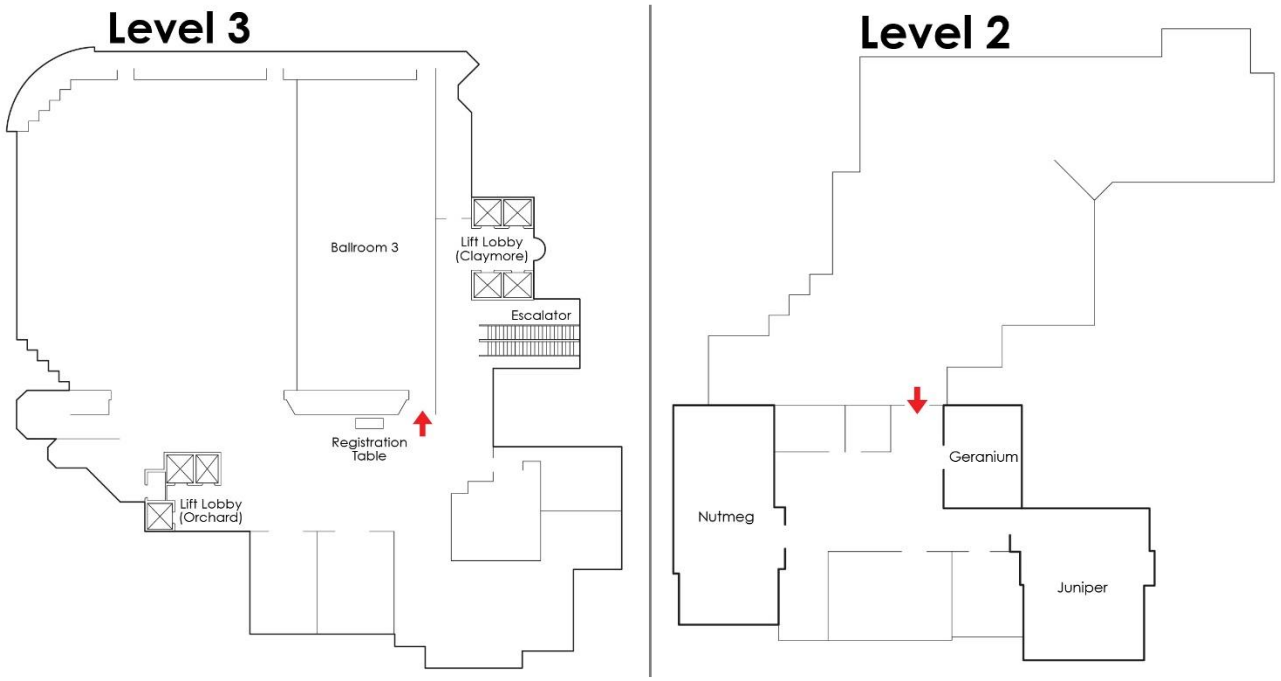
- understanding the potential for energy efficiency to enable a secure, sustainable energy supply
- supporting target setting and policy design to deliver energy efficient prosperity
- tracking progress through energy efficiency indicators and policy evaluation for continuous improvement.

There are five main modes of collaboration:

- hands-on policy support: focusing on the day to day needs of officials responsible for delivering energy efficiency policies (directly with the people leading and supporting policy making)
- thematic workshops: bringing together officials and experts from a range of countries to explore a specific topic (collaboration with dozens of key stakeholders)
- policy training: group training for junior officials and future leaders, primarily through the E4 Training Weeks (targeted capacity building for hundreds of people)
- webinars: online seminars offering access to a range of experts for key topics (general capacity building for 1000s of people)
- online training: self-paced learning on energy efficiency indicators (general capacity building for potentially tens of 1000s of people).

Map of Hotel

VENUE: Orchard Hotel, 442 Orchard Rd, Singapore 238879



Timetable of group work sessions

All plenary sessions will take place in Ballroom 3. For group work sessions, refer to the table below:

	Tuesday 16th July 14:00 – 17:30	Wednesday 17th July 14:00 – 17:30	Thursday 18th July 09:00 – 12:30
GROUP 1	BALLROOM 3	ROOM NUTMEG	ROOM JUNIPER
GROUP 2	ROOM JUNIPER	BALLROOM 3	ROOM NUTMEG
GROUP 3	ROOM NUTMEG	ROOM JUNIPER	BALLROOM 3

Training Programme

DAY 1 - AM	TUESDAY 16TH JULY	BALLROOM 3
08:30 - 09:00	Participant Registration - Welcome Coffee and Tea	
09:00 - 09:15	WELCOMING ADDRESS Jonathan Goh, Director of External Relations Department, Energy Market Authority of Singapore (EMA)	
09:15 – 09:45	WHY ARE WE HERE: TRACING THE PATH TO LOW-EMISSION, EFFICIENT AND RESILIENT BUILDINGS AND CONSTRUCTION Melanie Slade, Senior Programme Manager, Energy Efficiency, International Energy Agency (IEA)	
09:45 – 10:05	SINGAPORE'S GREEN BUILDINGS JOURNEY Toh Eng Shyan, Director, Green Mark (Existing Buildings) Department, Building and Construction Authority, Singapore	
10:05 – 10:20	MAPPING OF GREEN BUILDING CODES AND BUILDING ENERGY EFFICIENCY IN ASEAN Rizky Fauzianto, Team Leader of ASEAN-German Energy Programme (AGEP), GIZ	
10:20 – 10:40	Q&A AND INTERACTIVE ACTIVITY	
10:40 – 11:10	Group Photo & Coffee and Tea Break	
11:10 - 11:30	BRIDGING THE TECHNOLOGY GAP Maxine Jordan, Energy Policy Analyst, Energy Efficiency, IEA	
11:30 - 11:50	ENABLING INVESTMENT Brian Dean, Energy Efficiency, IEA	
11:50 – 12:10	SETTING TIMELINES AND TARGETS Ian Hamilton, Associate Professor, UCL Energy Institute, University College London	
12:10 – 12:20	Q&A	
12:20 – 12:30	ABOUT THE TRAINING FORMAT AND BREAKOUT GROUPS Maxine Jordan, Energy Policy Analyst, Energy Efficiency, IEA	
12:30 – 14:00	Lunch	

DAY 1 - PM | TUESDAY 16TH JULY

14:00 – 15:30	Group work: see detailed group work agenda.		
	GROUP 1	GROUP 2	GROUP 3
	BUILDING PLANNING AND DESIGN BALLROOM 3	BUILDING SYSTEMS AND OPERATIONS ROOM JUNIPER	POLICY IN ACTION ROOM NUTMEG
15:30 – 16:00	Coffee and Tea Break		
16:00 - 17:30	GROUP 1	GROUP 2	GROUP 3
	BUILDING PLANNING AND DESIGN BALLROOM 3	BUILDING SYSTEMS AND OPERATIONS ROOM JUNIPER	POLICY IN ACTION ROOM NUTMEG
18:00 – 20:00	NETWORKING RECEPTION Meet at Orchard Hotel Lobby at 18:00		

DAY 2 | WEDNESDAY 17TH JULY

09:00 - 12:15	SITE VISIT: ZERO ENERGY BUILDING AT THE NATIONAL UNIVERSITY OF SINGAPORE Meet at Orchard Hotel Lobby for departure at 09:15		
12:30 – 14:00	Lunch		
14:00 – 15:30	Group work: see detailed group work agenda.		
	GROUP 1	GROUP 2	GROUP 3
	POLICY IN ACTION ROOM NUTMEG	BUILDING PLANNING AND DESIGN BALLROOM 3	BUILDING SYSTEMS AND OPERATIONS ROOM JUNIPER
15:30 – 16:00	Coffee and Tea Break		
16:00 - 17:30	GROUP 1	GROUP 2	GROUP 3
	POLICY IN ACTION ROOM NUTMEG	BUILDING PLANNING AND DESIGN BALLROOM 3	BUILDING SYSTEMS AND OPERATIONS ROOM JUNIPER

DAY 3	THURSDAY 18TH JULY		
09:00 – 10:30	Group work: see detailed group work agenda.		
	GROUP 1	GROUP 2	GROUP 3
	BUILDING SYSTEMS AND OPERATIONS ROOM JUNIPER	POLICY IN ACTION ROOM NUTMEG	BUILDING PLANNING AND DESIGN BALLROOM 3
10:30 – 11:00	Coffee and Tea Break		
11:00 – 12:30	GROUP 1	GROUP 2	GROUP 3
	BUILDING SYSTEMS AND OPERATIONS ROOM JUNIPER	POLICY IN ACTION ROOM NUTMEG	BUILDING PLANNING AND DESIGN BALLROOM 3
12:30 – 14:00	Lunch		
14:00 – 15:30	PRESENTATIONS OF GROUP WORK DISCUSSION		
15:30 – 16:00	Coffee and Tea Break		
16:00 – 16:15	NEXT STEPS Melanie Slade, Senior Programme Manager, Energy Efficiency, IEA		
16:15 – 16:45	CLOSING REMARKS Jonathan Goh, Director, External Relations Department, EMA AWARD OF CERTIFICATES Jonathan Goh, Director, External Relations Department, EMA		

DETAILED GROUP WORK AGENDA

Building Planning and Design

Lead: Brian Dean, International Energy Agency
VENUE: BALLROOM 3

Tuesday 14:00 – 17:30	Wednesday 14:00 – 17:30	Thursday 09:00 – 12:30
GROUP 1	GROUP 2	GROUP 3

INTRODUCTORY ROUNDTABLE (15 mins)

1. INTRODUCTION TO THE SUBTOPICS & HOW THE SESSION WILL WORK (15 mins)
   - New buildings
   - Retrofits

2. SETTING THE LEVEL OF AMBITION: WHAT ARE WE TRYING TO ACHIEVE? (20 mins)

What are the drivers of energy use in new and existing buildings, and how can design and planning be optimised for low energy and comfortable buildings.

3. IDENTIFYING TECHNOLOGY GAPS (40 mins)

Introduction to relevant technology options for new buildings and building retrofits, followed by identification of key technologies, and mapping of current status, timelines and targets for technologies.

Output:

- Filled out Technology Timeline template
- List of the barriers identified for achieving this timeline

Coffee and Tea Break (30 mins)

4. IDENTIFYING POLICY GAPS (40 mins)

Introduction to relevant policy options for new buildings and building retrofits, followed by identification of key policies and mapping of current status, timelines and targets for polices.

Output:

- Filled out Policy Timeline template
- List of the barriers identified for achieving this timeline

5. IDENTIFYING THE "ENABLERS" (20 mins)

Including capacity building, finance, multiple benefits, and innovation.

6. IDENTIFYING THE KEY ACTIONS (30 mins)

DETAILED GROUP WORK AGENDA

Building Systems and Operations

Lead: Maxine Jordan, International Energy Agency

VENUE: ROOM JUNIPER

Tuesday 14:00 – 17:30	Wednesday 14:00 – 17:30	Thursday 09:00 – 12:30
GROUP 2	GROUP 3	GROUP 1

INTRODUCTORY ROUNDTABLE (15 mins)

1. INTRODUCTION TO THE SUBTOPICS & HOW THE SESSION WILL WORK (15 mins)
   - Building systems
   - Building operations

2. SETTING THE LEVEL OF AMBITION: WHAT ARE WE TRYING TO ACHIEVE? (20 mins)

What are the drivers of energy use in building systems and during operation, and how can systems and operation be optimised for low energy and comfortable buildings.

3. IDENTIFYING TECHNOLOGY GAPS (40 mins)

Introduction to relevant technology options for building systems and operations, followed by identification of key technologies and mapping of current status, timelines and targets for technologies.

Output:

- Fill out Technology Timeline template
- List the barriers identified for achieving this timeline

Coffee and Tea Break (30 mins)

4. IDENTIFYING POLICY GAPS (40 mins)

Introduction to relevant policy options for Building Systems and Operations, followed by identification of key policies and mapping of current status, timelines and targets for polices.

Output:

- Fill out Policy Timeline template
- List the barriers identified for achieving this timeline

5. IDENTIFYING THE "ENABLERS" (20 mins)

Including capacity building, finance, multiple benefits, and innovation.

6. IDENTIFYING THE KEY ACTIONS (30 mins)

DETAILED GROUP WORK AGENDA

Policy in Action

Lead: Melanie Slade, International Energy Agency

VENUE: ROOM NUTMEG

Tuesday 14:00 – 17:30	Wednesday 14:00 – 17:30	Thursday 09:00 – 12:30
GROUP 3	GROUP 1	GROUP 2

INTRODUCTORY ROUNDTABLE (15 mins)

1. INTRODUCTION TO THE SUBTOPICS & HOW THE SESSION WILL WORK (15 mins)
   - Policy implementation
   - Tracking progress

2. SETTING THE LEVEL OF AMBITION: WHAT ARE WE TRYING TO ACHIEVE? (20 mins)

Set the vision for building energy efficiency policies.

Output:

- Preliminary filling out of Targets and Timelines template

3. WHERE WE ARE TODAY & INSTITUTIONAL ARRANGEMENTS (40 mins)

Activity to identify current policy status and targets, and map the various stakeholders and their representatives, how they interact, and what their drivers are.

Output:

- Stakeholder policy radar map

Coffee and Tea Break (30 mins)

4. TRACKING PROGRESS (40 mins)

How to track progress and measure success, including case studies from cities.

5. IDENTIFYING & COMMUNICATING THE MULTIPLE BENEFITS (20 mins)

How identifying the multiple benefits of low energy buildings can be used to gather support from the various stakeholders.

6. IDENTIFYING THE KEY ACTIONS (30 mins)

Trainers

Building Planning and Design:

Brian Dean has more than 20 years of experience in energy efficiency and leads IEA's work on energy efficiency in buildings to support governments and organizations globally with energy efficiency policy. Brian has been an author for various recent reports, including IEA's Future of Cooling, Energy Efficiency 2018, and the Global ABC Global Status Report for Buildings and Construction. Prior to joining the IEA in 2014, Brian was head of Energy Efficiency Policy and Analytics at ICF International, where he supported the development of the ENERGY STAR program, utility-based energy efficiency programs, building energy codes and energy demonstration projects. Brian has an education in engineering, architecture and political science from Rensselaer Polytechnic Institute and Massachusetts Institute of Technology.

Pierre Jaboyedoff is an Associate at Effinart, and has been a consultant for the Swiss Agency for Development and Cooperation in India since 1992 and since 2011 he has been the leader of the Swiss team for the project BEEP (Building Energy Efficiency Project) which has been supporting India's Bureau of Energy Efficiency, including in the development of the new Energy Conservation Building Code for Residential Buildings (Eco-Niwas Samhita). Pierre has been active in R&D and consulting in high performance buildings since 1984, has been involved in IEA solar and buildings research projects, and is an expert in simulation assisted integrated design of buildings (passive design, HVAC and renewables). Pierre has a mechanical engineering master's degree with a focus on energy and thermal engineering from EPFL, Lausanne, Switzerland.

Building Systems and Operations:

Maxine Jordan leads the energy efficiency in buildings work within the IEA's Energy Efficiency in Emerging Economies (E4) Programme. After several years working as a building services and environmental design consultant in London specialised in high performance buildings, Maxine moved to Brazil to work in one of the country's leading energy efficiency and policy research consultancies, where she participated in preparatory studies for the National Energy Efficiency Action Plan for Buildings. At the IEA, Maxine contributes to policy support and analysis for buildings and cooling efficiency in the programme's emerging economies, as well as to the Buildings and Construction Roadmaps with the GlobalABC. Maxine holds a Masters of Engineering degree from the University of Cambridge in Civil, Structural and Environmental Engineering.

Ian Hamilton is an Associate Professor at the UCL Energy Institute, University College London, UK. Ian's research is focused on the nexus between energy supply-demand in buildings, indoor and urban environmental conditions, and health and climate change. Ian is the Principle Investigator for the IEA's 'Annex 70 - Building Energy Epidemiology' on energy and building stock data and modelling drawing together researchers from 25 institutions from across 12 countries. Ian is a co-investigator on the UK's 'Centre on Research for Energy Demand Solutions', the UK-China Centre for Total Building Performance and the UK's Health Protection Research Unit on 'Healthy and Sustainable Cities under Climate Change'.

Policy in Action

Melanie Slade has spent nearly thirty years in energy efficiency policy development and implementation in many parts of the world. She started out working in the UK Government on industrial energy efficiency and has worked with many other governments to establish energy efficiency programmes, perhaps most notably, the Government of China in the 1990s. She also spent six years overseeing the regulation of minimum energy performance standards and labels for lighting, equipment and appliances in Australia and New Zealand. Mel moved to the IEA in 2014 to manage the Energy Efficiency in Emerging Economies programme to work with policy makers in Brazil, China, India, Indonesia, Mexico, South Africa and Thailand to develop more effective energy efficiency policy, track its progress and assess its potential.

Sumedha Malaviya is a Manager at WRI India's Energy Program. Her primary focus area is energy efficiency in buildings. She manages the program's initiatives to understand residential sector energy use in cities, designing and implementing behaviour focused interventions on energy efficiency and energy conservation for households and most recently, a roadmap exercise to determine pathways to Zero Carbon Buildings (ZCBs) in India cities. Sumedha also coordinates the activities of the UN Sustainable Energy for All's Global Building Efficiency Accelerator or BEA in India. As a part of programmatic efforts, Sumedha supports research and stakeholder engagement on clean energy transition and electricity governance. Sumedha holds a Master's degree in Natural Resources Management from TERI University in New Delhi, India.