Breakout Session 2: Sustainable Buildings Roadmap for Southeast Asia

6 April 2021
Introduction and Session Overview

AGENDA

• Overview of session

• Overview of the roadmaps

• What we are trying to get out of the session

• Launch Menti polls

• Deep Dive Sessions

• Q&A Feedback

• ASEAN Building Roadmap Survey Launch

• Conclusions
Introduction and Session Overview

- Today marks the first of our stakeholder engagements to support the development of both the buildings and construction and cooling roadmaps.

- We’ll be conducting further webinars from April to July 2021, with publication of the roadmap report expected late 2021, so please stay tuned for further opportunities to participate.

<table>
<thead>
<tr>
<th>Duration</th>
<th>Session Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 min</td>
<td>Introduction and Session Overview</td>
</tr>
<tr>
<td></td>
<td>Dr Ian Hamilton, UCL Energy Institute</td>
</tr>
<tr>
<td>50 min</td>
<td>Deep dive on New and Existing Buildings, Systems and Operations</td>
</tr>
<tr>
<td></td>
<td>Panel discussion</td>
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<td></td>
<td>Moderated by Dr Ian Hamilton, UCL Energy Institute</td>
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<tr>
<td>50 min</td>
<td>Deep dive on Materials, Urban Planning and Resilience, Clean Energy</td>
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<tr>
<td></td>
<td>Panel discussion</td>
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<tr>
<td></td>
<td>Moderated by Ms Maxine Jordan, IEA</td>
</tr>
<tr>
<td>5 min</td>
<td>Summary and Next steps</td>
</tr>
<tr>
<td></td>
<td>Ms Maxine Jordan, IEA</td>
</tr>
</tbody>
</table>

- Speaker interventions
- Menti polls
- Panel discussion and Q&A
Go to www.menti.com and use the code 3174 7983

Who is in the “room”:

• Which country are you representing?

• Which part of the sector do you operate in?

You can access through QR Code
Which country are you representing today?

- Myanmar
- Vietnam
- India
- Indonesia
- Philippines
- Thailand
- Australia
- Cambodia
- Singapore
- South Africa
- Bangladesh
- Asean
- Republic of Moldova
- Asean Secretariat
Which sector do you work in?

- National government: 15
- Sub-national government: 3
- NGO, civil society, academic: 18
- Industry, industry association: 7
- Developer or real estate: 1
- Building designer: 0
- Financial: 3
- Other: 14
The path towards net-zero emission buildings

Decarbonising buildings requires reducing energy demand, embodied carbon, and decarbonising heat and electricity.

Hence 8 Roadmap themes:
- New buildings
- Existing buildings
- Systems
- Operations
- Clean Energy
- Urban planning
- Materials
- Resilience

Source: IEA (2019), *The Future of Cooling in Southeast Asia*
Building on the Regional Roadmap for Asia

Regional Roadmap for Asia

• Provides a comprehensive framework
• Contains info on “current status”
• Contains many examples and responses from ASEAN countries
• Network of key stakeholders (approx. 200 respondents/participants/reviewers)
• Highlights where the biggest data and ambition gaps are

Opportunity for ASEAN Roadmap

• More differentiation between member states or groups of member states
• Will be more specific in terms of which actions for which context, and about how to implement the recommended actions
• Integrate “enabling” actions on capacity building and finance with other actions
• More targeted and specific actions
Building on the Regional Roadmap for Asia

- ASEAN Roadmap builds on the Asia Regional Roadmap to focus on actions and strategies for supporting the transition to a zero-carbon, efficient and resilient building stock.

### Asia Regional Roadmap

<table>
<thead>
<tr>
<th>Current status (2020)</th>
<th>Recommended actions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Urban planning</strong></td>
<td>Prioritise sustainable urban planning and development</td>
</tr>
<tr>
<td>Lack of integrated urban planning and sustainable development among existing major growth areas</td>
<td><strong>New buildings</strong></td>
</tr>
<tr>
<td>Most construction occurring in places with some codes and mandatory minimum energy performance</td>
<td><strong>Existing buildings</strong></td>
</tr>
<tr>
<td>Energy performance and quality of existing buildings low and few energy-driven retrofits</td>
<td></td>
</tr>
</tbody>
</table>
The ASEAN Roadmap development process

1. Validate strategy and strategy elements
2. Compile information for current status for each country
3. Propose and validate milestones for 2025, 2030, For NZC
4. Propose and validate key actions required to meet these milestones
5. Compile best practice case studies as examples

In parallel: data collection, survey, stakeholder mapping, identification of best case studies
### ASEAN Roadmap - Draft vision and strategies, per theme

#### NEW BUILDINGS
New buildings are designed such that they enable higher levels of thermal comfort and energy efficiency, resulting in comfortable, affordable and low carbon buildings.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strengthen the adoption and compliance of mandatory building energy codes</td>
<td></td>
</tr>
<tr>
<td>Boost market demand for efficient, low carbon buildings</td>
<td></td>
</tr>
<tr>
<td>Boost capacity in delivery of efficient, low carbon buildings</td>
<td></td>
</tr>
</tbody>
</table>

#### EXISTING BUILDINGS
Existing buildings are retrofitted to achieve an appropriately high level of energy performance to reduce fuel costs and improve thermal comfort.

<table>
<thead>
<tr>
<th>Strategy</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Promote the uptake of high performance fabric systems</td>
<td></td>
</tr>
<tr>
<td>Boost the rate of energy efficiency retrofits</td>
<td></td>
</tr>
<tr>
<td>Boost the quality of energy efficiency retrofits</td>
<td></td>
</tr>
<tr>
<td>Promote the adoption of building performance standards and codes</td>
<td></td>
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</tbody>
</table>

#### SYSTEMS AND OPERATIONS
To promote the adoption of energy efficient systems and modes of operations that lower embodied carbon and improve energy performance.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve quality, availability and efficiency of appliances and systems</td>
<td></td>
</tr>
<tr>
<td>Encourage uptake of clean, smart and efficient devices and systems</td>
<td></td>
</tr>
<tr>
<td>Improve efficiency of building operation</td>
<td></td>
</tr>
<tr>
<td>Promote the adoption of building performance standards and codes</td>
<td></td>
</tr>
</tbody>
</table>

#### MATERIALS
To mainstream the use of materials and construction techniques that lower embodied carbon and improve energy performance.

<table>
<thead>
<tr>
<th>Strategy</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Promote new design and construction practices for greater material efficiency</td>
<td></td>
</tr>
<tr>
<td>Decarbonise production of carbon intensive materials</td>
<td></td>
</tr>
<tr>
<td>Collect data and promote disclosure of embodied carbon</td>
<td></td>
</tr>
<tr>
<td>Governments leading by example</td>
<td></td>
</tr>
</tbody>
</table>

#### RESILIENCE
Cities are planned to limit construction in risk areas, ensuring critical urban infrastructure services, including vulnerable populations, and integrating resilience attributes in building materials.

<table>
<thead>
<tr>
<th>Strategy</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Improve adequacy and reliability of built environment resilience</td>
<td></td>
</tr>
<tr>
<td>Foster a whole-of-government approach to resilience</td>
<td></td>
</tr>
<tr>
<td>Integrate resilience in building codes and materials</td>
<td></td>
</tr>
<tr>
<td>Increase and monitor data and information on disaster risks</td>
<td></td>
</tr>
</tbody>
</table>

#### URBAN PLANNING
Cities are developed using integrated approaches and policies to be more sustainable, resource-efficient, compact, connected, and liveable.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve coordination and policy alignment for low-carbon development</td>
<td></td>
</tr>
<tr>
<td>Boost low-carbon urban infrastructure and construction</td>
<td></td>
</tr>
<tr>
<td>Expand capacity to deliver low-carbon urban development</td>
<td></td>
</tr>
</tbody>
</table>

#### INTEGRATION OF CLEAN ENERGY
Cities are powered by clean, integrated energy systems enabling buildings to provide flexibility to the power system with the right policies and regulations.

<table>
<thead>
<tr>
<th>Strategy</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Make commitments to net-zero carbon buildings over whole life-cycle</td>
<td></td>
</tr>
<tr>
<td>Foster the uptake of clean and renewable energy</td>
<td></td>
</tr>
<tr>
<td>Support clean and renewable energy through regulatory frameworks</td>
<td></td>
</tr>
<tr>
<td>Promote grid interactive efficient buildings</td>
<td></td>
</tr>
</tbody>
</table>
New buildings draft vision and strategy

NEW BUILDINGS
New buildings are designed such that they enable higher levels of thermal comfort and energy efficiency, resulting in comfortable, affordable and low carbon buildings.

- Strengthen the adoption and compliance of mandatory building energy codes
- Boost market demand for efficient, low carbon buildings
- Boost capacity in delivery of efficient, low carbon buildings
### Example timeline: New buildings

#### NB1: Boost capacity in delivery of efficient, low carbon buildings

<table>
<thead>
<tr>
<th>Strategy elements to meet desired outcome eg. NB1</th>
<th>Timeframes: Define milestones vs dates, to serve as indicators for tracking progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current status</td>
<td>By 2025</td>
</tr>
<tr>
<td>Mainstream practice of passive and low carbon design</td>
<td></td>
</tr>
<tr>
<td>Increase availability of EE and low carbon materials</td>
<td></td>
</tr>
<tr>
<td>Mainstream integrated design and LCA</td>
<td></td>
</tr>
</tbody>
</table>

<Examples of proposed actions, examples, indicators for tracking progress>

**Targeted actions** to support strategy element, by group of countries where relevant

**Examples of current good practice**, from ASEAN or elsewhere
Key expert stakeholder questions

• What are current building construction practices, across the AMS?
  - State of the art
  - Mainstream
  - Worst

• Policy mapping: Which policies are in place, or are in development to address energy efficiency and whole life low carbon buildings? Which are the most successful policies, and how could they be replicated?

• Which areas need the most support for development:
  - Capacity building, including awareness and implementation capacity
  - Finance
  - Cross ministerial (horizontal) and cross governmental (vertical) coordination

• Data mapping: Where are the biggest data gaps, and how could these be bridged?

• What milestones could be defined for 2025, 2030, and for a long term goal of net zero carbon buildings, across the roadmap themes, and how to track progress towards these milestones?
What we want to get out of today’s session

- Audience input on current conditions of key ASEAN Building Roadmap action areas

- Audience input on timing for when ASEA Building Roadmap action areas could become commonplace

- Audience and panel discussion on actions that can support action area implementation

- Network of stakeholders (you!) who will further contribute and share expert input into the Roadmap development

- Launch of the ASEAN Building Roadmap Survey
Have your say via Menti:

Go to **www.menti.com** and use the code **3174 7983**

- We have compiled a series of two questions per Roadmap theme
- We will discuss the answers to these in the panel discussion and Q&A

---

1) In your country, **how common** are the following:
   - <list of policies, technologies>

2) In your country, **by when** could the following be common?
   - <same list of policies, technologies>

---

**Example:**

Existing buildings: in your country, how common are the following?

- Energy codes for existing buildings
  - Commonness: uncommon

- Certification standards for existing buildings
  - Commonness: uncommon

- Building energy labelling
  - Commonness: uncommon

- Awareness of building energy performance
  - Commonness: uncommon
Deep dive 1: New and Existing Buildings, Systems and Operations

Moderated by Dr Ian Hamilton
Deep dive 1: New and existing buildings, systems and operations

Moderator: Ian Hamilton, Associate Professor, UCL Energy Institute

Jeswynn Yogaratnam
Head of Policy Reform
Global Buildings Performance Network

Joy Esther Gai Jiazi
Pacific Programmes Head (Net Zero)
World Green Buildings Council

Vu Thi Kim Thoa
Senior Expert GIZ Programme for Energy Efficiency in Buildings, Vietnam
Deep dive 1: New and existing buildings, systems and operations

Moderator: Ian Hamilton, Associate Professor, UCL Energy Institute
Jeswynn Yogaratnam
Head of Policy Reform
Global Buildings Performance Network
Breakout Session 2: Sustainable Buildings Roadmap for Southeast Asia

POLICY REFORM

Focusing on transitionary policy strategies from a bottom-up approach to enable regulatory reform in building codes to meet National Zero Carbon Emission Goals

1. Create a reporting and data sharing platform.

2. Empower an independent assessor or a coalition of experts to assess the effectiveness of pilot projects.

3. Enable data-driven policy-making.
Joy Esther Gai Jiazi
Pacific Programmes Head (Net Zero)
World Green Buildings Council
Vu Thi Kim Thoa
Senior Expert GIZ
Programme for Energy Efficiency in Buildings, Vietnam
Rio Jon Piter Silitonga
Research Analyst
ASEAN Centre for Energy
Promotion of ZEB Family Concept in ASEAN Region

Preliminary Approaches (for further research):

- Awareness raising & Sharing of experience and knowhow
  - Enhancing common understanding
    - Awards
    - Seminar
    - Exhibition
    - Stakeholder meeting

- Under the business sector initiatives
  - Capacity building
    - Demonstration, Reference case, Training program
    - Technical supports (guideline)
    - R&D, innovation

- Under the government sector initiatives
  - Policy formulation
    - Master plan (providing clear direction)
    - Action plan
    - Coordination (intergovernmental and business sectors)
    - Collaboration (multilateral)

- Collaboration of policy and business sectors

- Creation and Cultivation of ecosystem for ZEB
  - Facilitation of market transformation
    - Incentives (financial and nonfinancial)
    - Voluntary/Mandatory
    - Labeling scheme
    - Energy consumption monitoring
    - Standard and Building codes

- Step-by-step approach
- Flexible ways

ASEAN Energy Awards

- Launched in 2000
- Annual Regional Award Programme
- Energy Excellence Highest Rewards

Overview of ZEB current status
Gap analysis via stakeholder consultation (FGD, workshop)
Ms. Ly Thi Phuong Trang
Vice President of VISRAE,
Director General of Daikin Vietnam
VIETNAM CASE STUDY: NATIONAL CHAIN STORES

1. CHAIN STORES SOLUTION: OPERATION & SYSTEM

- Centralized controller
- Cloud server
- In-store app
- Watt meter

2. SITE CONTROL VIEW FOR STORES OWNERS

- Application
- Registration
- Equipment
- Schedule
- Energy report
- Consumption data
- Equipment layout
- Maintenance schedule

3. DEMONSTRATION RESULT

- Current operation
- 1st time Operation
- 2nd time Optimization

- Setting temperature
  - 1st optimize: 23-25°C
  - 2nd optimize: 26-28°C

- Energy reduction:
  - 1st optimize: 11.8%
  - 2nd optimize: 40.5%

4. CENTRALISED CONTROL VIEW AT HEADQUARTER

Result:
After 3.4 months of adoption, achieve saving of 1,260 kWh/month, equivalent to 35% saving.
Menti poll results and discussion
<on Mentimeter.com>
New Buildings: in your country, how common are the following?

- Optimised passive design: 2.3
- Building energy codes: 3
- Well enforced building energy codes: 2.4
- Net-zero building standards: 1.7
- Building passports: 1.5
- Financial incentives or green financing: 2.2
New buildings: by when could the following actions be common?

- Optimised passive design
- Building energy codes
- Well enforced building energy codes
- Net-zero building standards
- Building passports
- Financial incentives or green financing
Existing buildings: in your country, how common are the following?

- Energy codes for existing buildings
- Certification standards for existing buildings
- Building energy labelling
- Awareness of building energy performance
- Active retrofit market
- Compliance framework for retrofits and building code adoption
Existing buildings: in your country, by when could the following be common?

<table>
<thead>
<tr>
<th></th>
<th>2030</th>
<th>Beyond 2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy codes for existing buildings</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Certification standards for existing buildings</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Building energy labelling</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Awareness of building energy performance</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Active retrofit market</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Compliance framework for retrofits and building code adoption</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>
Systems & Operations: in your country, how common are the following?

- Minimum energy efficiency standards
- Appliance Labelling (EESL) programmes
- Local market manufacturing capacity
- Incentives for the purchase of efficient systems
- Energy audits
- Energy performance disclosure programmes
Systems & Operations: in your country, by when could the following be common?

- Minimum energy efficiency standards
- Appliance Labelling (EESL) programmes
- Local market manufacturing capacity
- Incentives for the purchase of efficient systems
- Energy audits
- Energy performance disclosure programmes

2030
Beyond 2050
Deep dive 2: Materials, Urban Planning and Resilience, Clean Energy

Moderated by Ms Maxine Jordan, IEA
Deep dive 2: **Materials, urban planning and resilience, clean energy**

**Vu Thi Kim Thoa**  
Senior Expert GIZ  
*Programme for Energy Efficiency in Buildings, Vietnam*  

**Brendan Coleman**  
Green Finance and Investment, Centre on Green Finance and Investment  
*OECD*  

**Brian Dean**  
Head of Energy Efficiency and Cooling  
*Sustainable Energy for All*  

**Dr Ian Hamilton**  
Associate Professor  
*UCL Energy Institute*  

**Moderator:** Maxine Jordan, Energy Analyst, *International Energy Agency*
Vu Thi Kim Thoa
Senior Expert GIZ
Programme for Energy Efficiency in Buildings, Vietnam
Brendan Coleman
Green Finance and Investment,
Centre on Green Finance and Investment
OECD
Brian Dean
Head of Energy Efficiency and Cooling
Sustainable Energy for All
Urban Planning and Heat action plans
Dr Ian Hamilton
Associate Professor
UCL Energy Institute
Digitalisation, with the right policies, enables a progression to optimising the efficiency of the whole system and enabling optimum distributed energy systems.
Menti poll results and discussion
<on Mentimeter.com>
Materials: in your country, how common are the following?

- Designers and manufacturer capacity
- Benchmarks and targets for low-carbon materials
- Disclosure of embodied carbon
- Certification and labelling standards
- Low embodied carbon in public procurement
- Supplier commitments to lowering embodied carbon of materials
Materials: in your country, by when could the following be common?

- Designers and manufacturer capacity
- Benchmarks and targets for low-carbon materials
- Disclosure of embodied carbon
- Certification and labelling standards
- Low embodied carbon in public procurement
- Supplier commitments to lowering embodied carbon of materials

Timeline:
- 2030
- Beyond 2050
Urban Planning: in your country, how common are the following?

- Adoption of multilevel governance for low-carbon development
- Multi-sectoral integrated City Masterplans (or other urban development plans and strategies)
- Dedicated agency at municipal level with adequate skills and resources
- Application of sustainable development practices in urban planning and infrastructure
- Data and information on buildings, urban infrastructure, and environment at the local level

Uncommon

Very common

[Graph showing the frequency of occurrence for each item]
Urban Planning: in your country, by when could the following low carbon and sustainable urban planning become common?

- Adoption of multilevel governance for low-carbon development (1.8)
- Multi-sectoral integrated City Masterplans (or other urban development plans and strategies) (1.7)
- Dedicated agency at municipal level with adequate skills and resources (1.8)
- Application of sustainable development practices in urban planning and infrastructure (1.7)
- Data and information on buildings, urban infrastructure, and environment at the local level (1.7)

2030

Beyond 2050
Resilience: in your country, how common are the following?

- Comprehensive urban risk assessment and mapping
- Adopt risk-sensitive land-use policies to guide urban development away from risk-prone areas
- Increase technical capacity in government institutions, with adequate resource
- Adopt integrated governance frameworks to enable efficient and effective local resilience capacity
- Work across governments and stakeholders to ensure risk assessments/plans are holistic across jurisdictions and sectoral agencies
- Adopt resilience in building codes
Resilience: in your country, by when could the following be common?

- Comprehensive urban risk assessment and mapping
- Adopt risk-sensitive land-use policies to guide urban development away from risk-prone areas
- Increase technical capacity in government institutions, with adequate resource
- Adopt integrated governance frameworks to enable efficient and effective local resilience capacity
- Work across governments and stakeholders to ensure risk assessments/plans are holistic across jurisdictions and sectoral agencies
- Adopt resilience in building codes
Clean Energy: in your country, how common are the following?

- Integration of on-site renewable energy: Very common (2.8)
- Community/district level renewable energy: Uncommon (2.3)
- Mandatory provisions for RE and flexibility: Uncommon (1.8)
- Policies/regulations for distributed generation: Uncommon (2.3)
- Green power procurement tools for public sector buildings: Uncommon (2.0)
- Digital tools to enhance flexibility and clean energy deployment: Uncommon (2.0)

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Clean Energy: in your country, by when could the following be common?

- Integration of on-site renewable energy
- Community/district level renewable energy
- Mandatory provisions for RE and flexibility
- Policies/regulations for distributed generation
- Green power procurement tools for public sector buildings
- Digital tools to enhance flexibility and clean energy deployment
Next steps – have your say, and keep in touch!

- ASEAN Roadmaps collaboration website: access here

Please answer our survey here:
Cooling and Buildings Roadmaps – next steps

- Complete and submit our first draft of both Roadmaps by the end of April 2021.

- Seek feedback and input from AMS on policy mapping and available data sources to inform the roadmap.

- Continue analysis and research to inform and improve next drafts of roadmap alongside feedback from ASEAN.

- Continue to plan and deliver the webinar and workshop series with ACE

- if you have good case studies, reports, or datasets to support our roadmap on zero-emission, efficient and resilient buildings and construction in Southeast Asia, please get in touch!

- Project timeline:
  - 1st draft: April
  - Feedback on drafts: April to July
  - 2nd draft: July
  - Workshops to review and finalise: August to September
  - Final draft: October
Thank you for your contributions!

Keep in touch at maxine.jordan@iea.org

See you back in the plenary for the closing session