New Ideas for Sustainable Business and Lessons from Pioneers in Circular Economy and Climate Change

7 June 2019, BITEC, ASEAN Sustainable Energy Week

13:00-14:40

Emerging Opportunities Presented by Climate Actions and Technological Innovation

Panelists:

Wisaruth Maethasith, (on behalf of Pongpan Vorasayan, Senior Professional Engineer), Bureau of Energy Regulation and Conservation, Department of Alternative Energy Development and Efficiency (DEDE)

Attapon Jirawatjanya, Deputy Governor, Industrial Estate Authority of Thailand (IEAT)

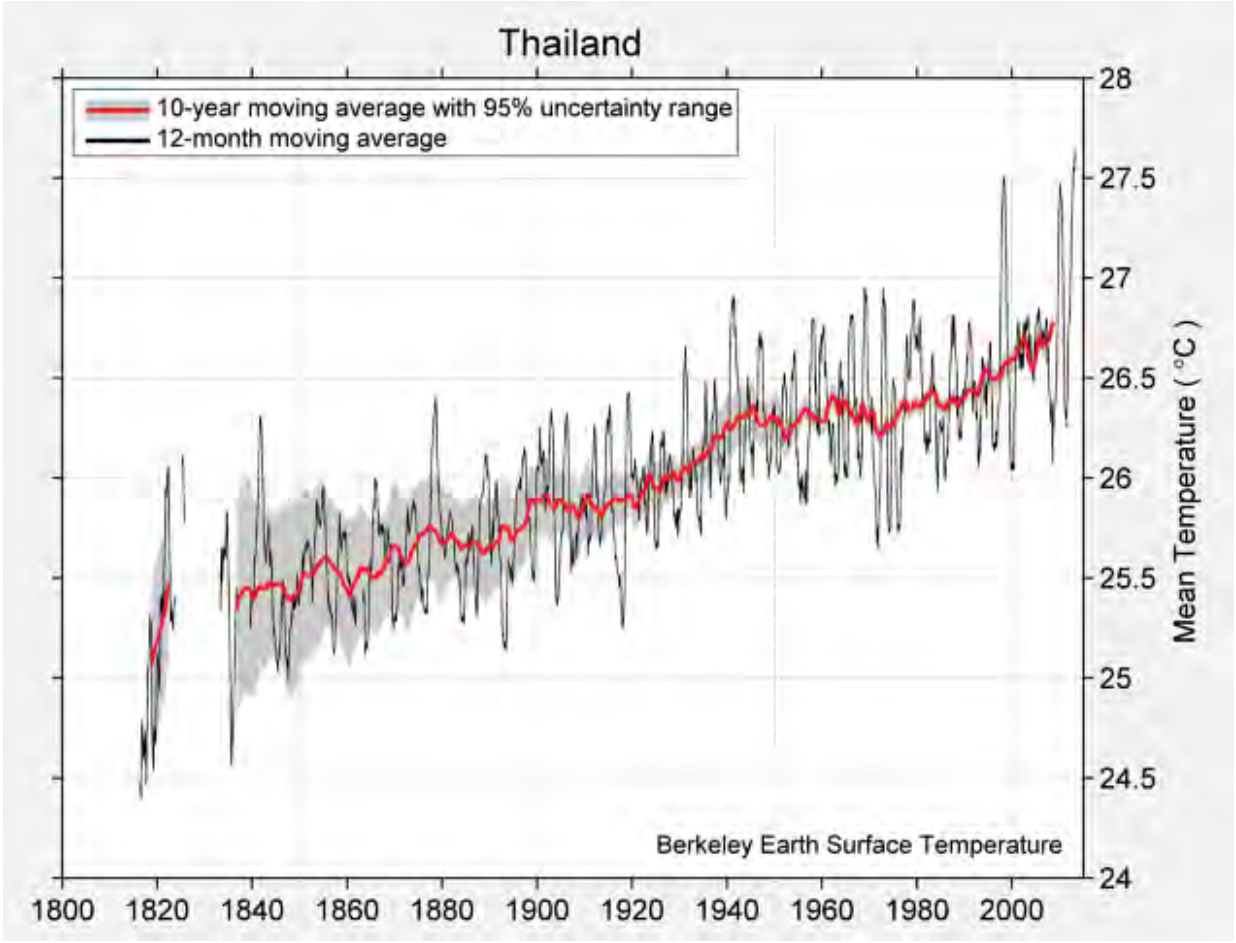
Keiji Hashimoto, Assistant General Manager, Azbil (Thailand)

Andrew Kent Jan, Head of Balance Sheet Management, TMB

Moderator:

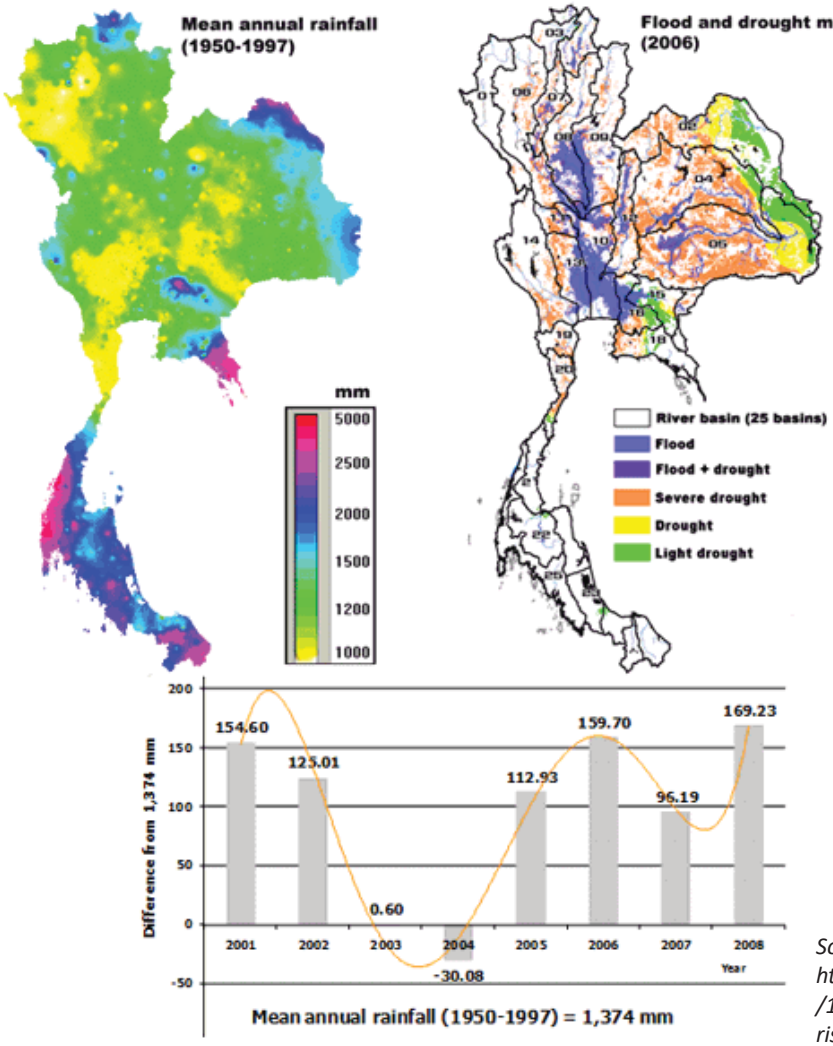
Toshizo Maeda, Deputy Director, IGES Kansai Research Centre, Japan

Climate change in Thailand



Source: http://berkeleyearth.lbl.gov/regions/Thailand

Flood and drought in Thailand



Source: https://travelandtourismpr.wordpress.com/2011/12/18/tourism-authority-of-thailand-battles-floods-using-public-relations/

Source: http://www.thaiwater.net/web/index.php/knowledge/128-hydro-and-weather/295-riskmanagementclimate.html

Air and water pollution in Thailand

Source: https://globalnews.ca/news/4013320/bangkok-air-pollution-dangerous-levels/

Source: https://www.greenpeace.org/southeastasia/story/556/producer-responsibility-the-key-to-solving-thailands-plastic-crisis/

GHG emissions reduction target

Submission by Thailand
Intended Nationally Determined Contribution and Relevant Information

As a developing country highly vulnerable to the impacts of climate change, Thailand attaches great importance to the global efforts to address this common and pressing challenge. Pursuant to decisions 1/CP.19 and 1/CP.20, Thailand hereby communicates its intended nationally determined contribution (INDC) and the relevant information.

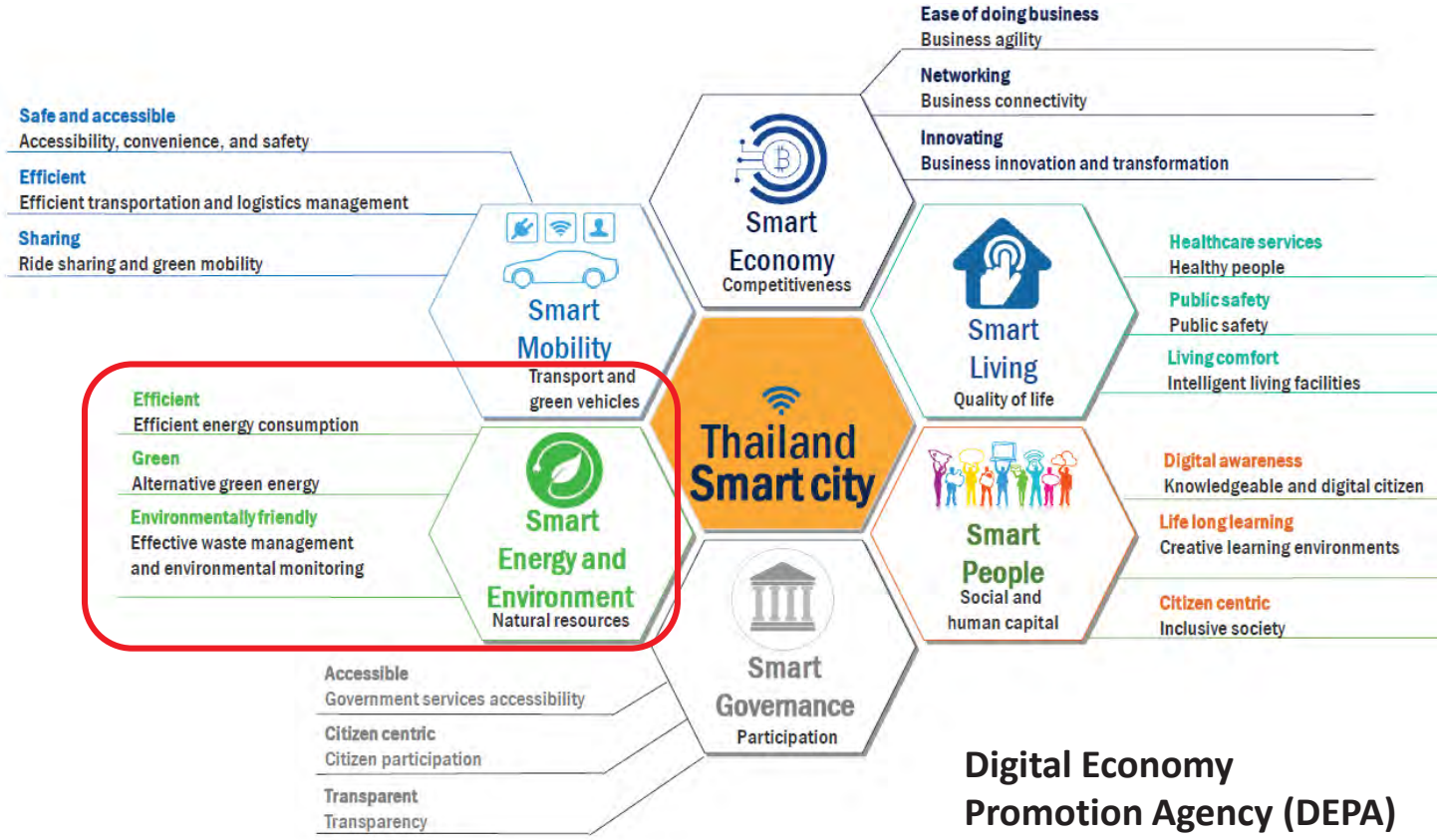
Thailand intends to reduce its greenhouse gas emissions by 20 percent from the projected business-as-usual (BAU) level by 2030.
The level of contribution could increase up to 25 percent, subject to adequate and enhanced access to technology development and transfer, financial resources and capacity building support through a balanced and ambitious global agreement under the United Nations Framework Convention on Climate Change (UNFCCC).

Accompanying information

Baseline:	Business-as-usual projection from reference year 2005 in the absence of major climate change policies (BAU2030: approx. 555 $MtCO_2e$)

Source: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Thailand%20First/Thailand_INDC.pdf

Six areas of smart city development



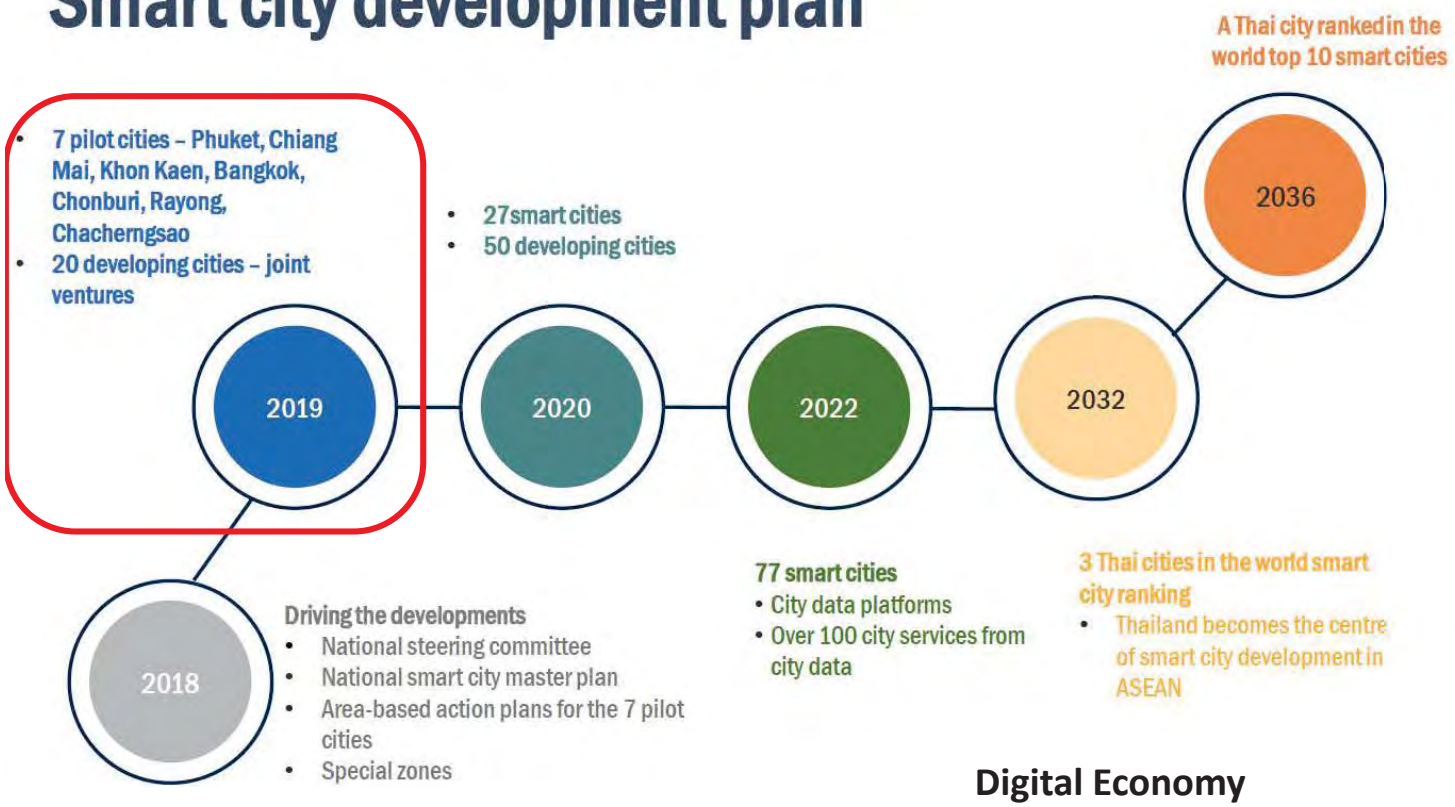
Digital Economy Promotion Agency (DEPA)

https://www.tma.or.th/2016/uploads/file/Smart%20City-Future%20Cities%20of%20Thailand%20%E0%B9%82%E0%B8%94%E0%B8%A2%20%E0%B8%9C%E0%B8%A8.%E0%B8%94%E0%B8%A3.%E0%B8%93%E0%B8%B1%E0%B8%90%E0%B8%9E%E0%B8%A5%20%E0%B8%99%E0%B8%B4%E0%B8%A1%E0%B8%A1%E0%B8%B2%E0%B8%99%E0%B8%9E%E0%B8%B1%E0%B8%8A%E0%B8%A3%E0%B8%B4%E0%B8%99%E0%B8%97%E0%B8%A3%E0%B9%8C%20%20.pdf

Multi-ministerial steering committee

Source: https://www.set.or.th/thailandfocus/2018/files/THFocus2018Day2_0900-1000_Pichet.pdf

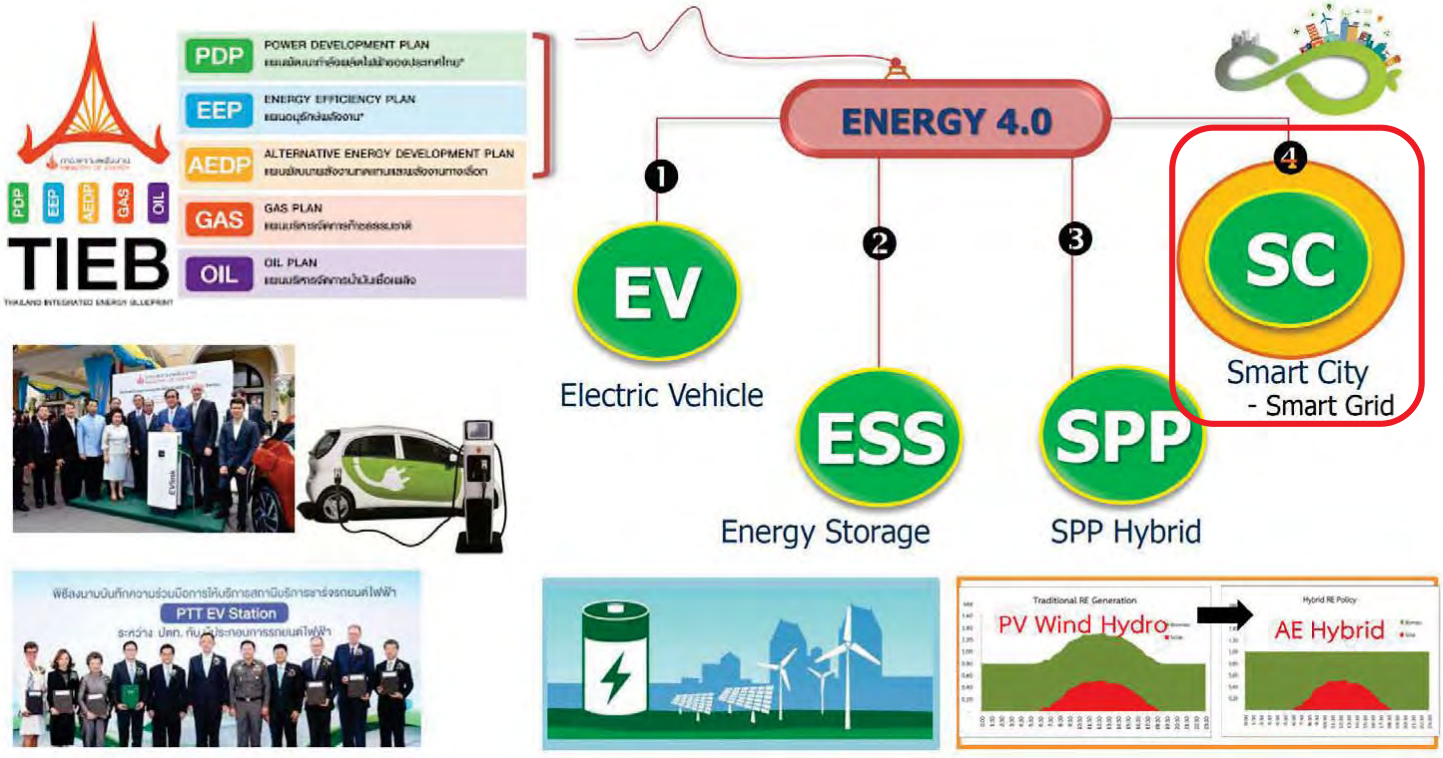
Smart city development plan



Digital Economy Promotion Agency (DEPA)

Source: https://www.nstda.or.th/nac/2019/images/seminar/26_Smartcity_passakorn.pdf

Thailand Integrated Energy Blueprint (TIEB)



Source: http://www.thai-water.com/Portals/3/conference/2.%20Presentation_Mr.%20Kamol%20Tanpipat_REA%20Smart%20City%2007-16-2017.pdf

Smart Cities-Clean Energy Project

Objective

To support Local Administratives, Private Developers, Government Agencies, State Enterprises, Universities in creative development of Smart City

SMART City Criteria

1. SMART Energy
2. SMART Mobility
3. SMART Community
4. SMART Environment
5. SMART Economy
6. SMART Building
7. SMART Governance
8. SMART Innovation

November 2016 — **Top 20** — **March 2017** — **Top 7**

Proposal → Contest Stage 1 → Contest Stage 2

Proposal Devlopment

- Clean Energy
- Green City Complex e.g. community, residential complex, government complex, school, hospital

Financial support for 20 cities @ 500,000 THB = 10,000,000 THB

Master Plan

- Land use plan, etc.
- Support data on energy demand & supply, energy management, landscape architecture design and related system development design

Financial support for schematic design and financial study max. of 10,000,000 THB/city for 7 cities = 70,000,000 THB

August 2017

Contest Stage 3

Business Model

Achievement Recognition

Source: http://www.thai-water.com/Portals/3/conference/2.%20Presentation_Mr.%20Kamol%20Tanpipat_REA%20Smart%20City%2007-16-2017.pdf

SMART City Criteria

1. SMART Energy

1.1 Energy Generation
- 30% from Renewable Energy
- Onsite power generation
- Energy Storage

1.2 Energy Distribution
- District Cooling/Heating
- Eco-Vehicle (EV,PHEV,FCV,HV)

1.3 Green House Gas Reduction
- 30 % CO_2 Reduction

1.4 SMART Grid
- Area Energy Management System
- SMART Meters (AMI)
- Micro Grid
- Distribution Management System

4. SMART Environment

4.1 Natural Environment
- Preservation and Protection
- Natural Trail
- Sustainable Use of Natural Resources
- Reduction of garbage dump

4.2 Agricultural Environment
- Recovery of peri-urban area
- Zero km production
- Use organic fertilizer
- Industrial composting
- System of constructed wet land
- Food supply chain
- Monitoring of cultivated field
- Innovation system of production,

4.3 Urban Environment
- Waste Management
- Water Management
- Green Area, Public Open Space and Brown Field Site
- Urban parks, gardens, public spaces
- Preservation and Production of cultural heritage
- Efficiency and monitored sewage system
- Multifunctional and interactive urban furniture
- Reduction of pollution and urban heat island effect

6. SMART Building

6.1 Green Buildings Policy
- 100% Green Buildings Certified on TREES rating system

6.2 Net Zero Energy Buildings (NZEB)

Source: http://www.thai-water.com/Portals/3/conference/2.%20Presentation_Mr.%20Kamol%20Tanpipat_REA%20Smart%20City%2007-16-2017.pdf

Energy Policy and Planning Office
MINISTRY OF ENERGY

Smart city development in EEC

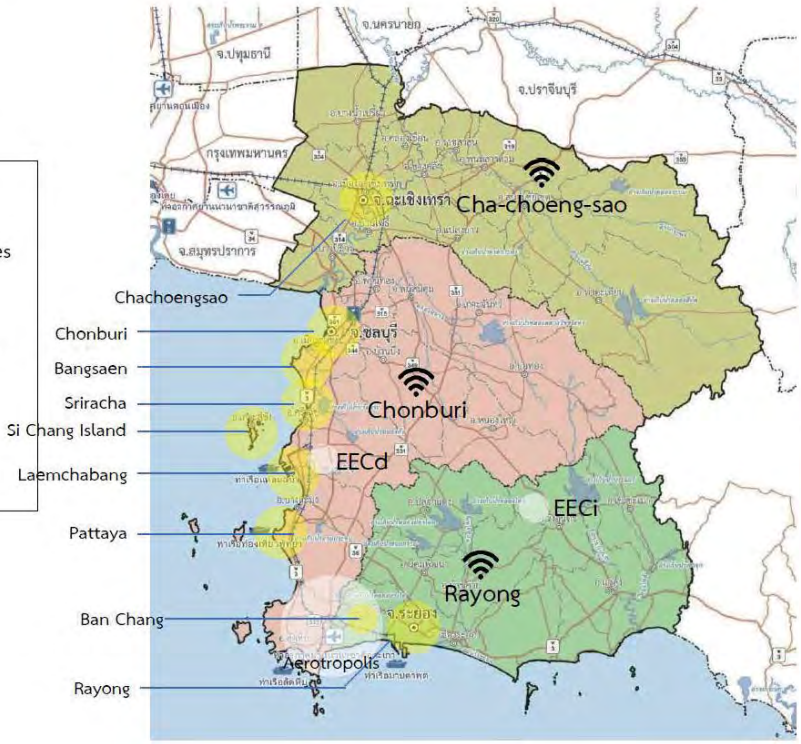
City Development in EEC

depa
สำนักงานส่งเสริมเศรษฐกิจดิจิทัล
Digital Economy Promotion Agency

Existing / Old Cities

Lead by Thailand's Smart Cities Development Committee

- Ministry of Digital Economy
- Ministry of Energy
- Ministry of Transport
- And so on



EEC
เชื่อมโลก ให้ไทยแล่น

New Cities

Lead by EEC's Smart City Development Committee

- EECa : Aerotropolis – U Tapao
- EECb : Business City - Chonburi
- EECd : Digital Park – Chonburi
- EECi : Innovation Park – Rayong
- Livable Smart City and (Non-Specific Location)

and New Cities by Private Sector

Source: "EEC in Action, EEC Smart City Development 2019", Eastern Economic Corridor (EEC)

Emerging Opportunities Presented by Climate Actions and Technological Innovation

Guiding questions:

In response to climate change and associated energy and environmental challenges, **development of smart cities** is well promoted by the Government of Thailand. However, there is still a gap to realize it and proactive engagement of the private sector is imperative. In relation to that:

- ✓ **What should be prioritized?**
- ✓ **What has been successful and what can be built on that?**
- ✓ **Are there any useful lessons from other countries?**
- ✓ **How private investment can be guided to climate-related, energy efficient and environmentally friendly actions?**

Session outline:

1) Smart city development and supporting policies
2) Potential in the industrial sector
3) Potential in the building sector
4) Directing finance to smart city development
5) Discussion and Q&A

Additional slides

Results of the discussion:

Participants: Energy auditors, DEDE, BMA and energy managers from **18 private companies** (food processing, chemical, textile, metal, automobile, electric, packaging, power generation and biofuel)

Issues raised by the participants:

1. There is no strong incentives to submit accurate **energy report** as there is **no feedback and penalty** currently;
2. Financial information on practical energy conservation measures, such as **return on investment**, is required to make the investment decision; and
3. Encouraging energy conservation of **small and medium-sized enterprises (SMEs)** is a challenge as they lack knowledge and capacity compared to large companies

Suggestions (from Japan's experiences):

1. Start **evaluating the energy report** submitted by the designated companies by applying industry- or company-specific **benchmarks**;
2. Develop a **case study** booklet with **financial information** showcasing successful cases; and
3. Provide **subsidies for SMEs' energy audits**.

Training on applicable low-carbon technologies in Thailand, 13-14 Nov 2018

Results of a questionnaire survey:

Respondents: Energy managers of **18 private companies** (food processing, chemical, textile, metal, automobile, electric, packaging, power generation and biofuel)

- All 18 companies have ever **invested in energy conservation**, namely in **LEDs** (8 companies), **air conditioning** (8), **boiler** (4), **compressed air system** (4) and **inverter** (4), among others. **Payback periods** of these investments were mostly **less than 3 years**, but also included 4-5 years.
- Most companies admitted that **the energy reporting system encouraged them in energy conservation** in terms of **identifying the waste usage by monitoring**, **revising the production processes**, **setting energy conservation target**, and **changing the mindset of the employees**.
- **Thirteen companies** out of 18 have set **annual energy conservation target** with 1% improvement (5 companies) and 2-4% improvement (5). Thirteen companies supported the idea of setting a compulsory energy conservation target and 4 companies suggested that enforcing current system with self-determined target would suffice.

Class evaluation system for large-scale energy users in Japan (since 2016)

Source: Original in Japanese; unauthorized translation by IGES https://www.meti.go.jp/press/2016/05/20160531002/20160531002-1.pdf

- Evaluating companies' performance in **4 classes (S, A, B & C)** based on annual reports in accordance with the Energy Conservation Law
- Superior companies (S-class) announced; stringent survey for stagnant companies (B-class)
- Companies can compare their performance with others.

S-class: Superior

7,775 (62.6%) *1

1) Achieved the 1% annual improvement target*2, or
2) Achieved the benchmark *3

Company's name & the number of years of achievement are published at METI website.

A-class: Average

3,430 (27.7%)*1

Companies which are not classified "S" or "B".

B-class: Stagnant

1,207 (9.7%)*1

1) Target unachieved & energy intensity increased for two consecutive years; or
2) More than 5% increase of the 5-year average

Reminder sent and on-site survey conducted

C-class: Poor

Performance not improved among the B-class

Instruction based on Article 6 of the Energy Conservation Law

*1 Based on FY2015 Annual Report (performance in FY2014): a total of 12,412 companies.

*2 **Improvement of energy intensity by 1% every year** compared to the 5-year average

*3 Benchmarks set for specific industrial sectors

Energy conservation benchmarks for industries

Table (8) Benchmark index and medium-and long-term target level

Classification	Business Field	Benchmark Index	Level to Target
1A	**Iron manufacturing using blast furnaces** (business to manufacture pig iron using blast furnaces to manufacture products)	The value obtained by A/B A:Energy consumption in the blast furnaces for steel business B:Amountofraw steel	0.531 kL/t or less
1B	**Common steel manufacturing using electrical furnaces** (business to manufacture pig iron using electrical furnaces to manufacture rolled steel products, excluding iron manufacturing using blast furnaces)	Sum of (1) and (2) (1)The value obtained by A/B A:Energy consumption in the process to manufacture raw steel using electrical furnaces B:Amountofraw steel (2)The value obtained by A/B A:Energy consumption in the process to manufacture rolled common steel products from billet B:Amountofrolled steel	0.143 kL/t or less
3	**Cement manufacturing** (business to manufacture portland cement (JIS R5210), blast furnace cement (JIS R 5211), silica cement (JIS R5212), fly-ash cement (JIS R5213))	Total of (1) to (4) (1)The value obtained by A/B A: Energy consumption in the raw material process B: Production volume in the raw material part (2)The value obtained by A/B A: Energy consumption in the pyroprocess B: Production volume in the pyroprocess part (3)The value obtained by A/B A: Energy consumption in the finishing process B: Production volume in the finishing part (4)The value obtained by A/B A: Energy consumption in the shipping process, etc. B: Shipping volume	3739 MJ/t or less

Source: https://www.asiaeec-col.eccj.or.jp/wpdata/wp-content/uploads/ecguideline-table.pdf

Energy conservation benchmarks for industries

Classification	Business Field	Benchmark Index	Level to Target
4A	**Paper manufacturing** (mainly, business to manufacture paper (printing paper (including coated printing paper, lightweight coated printing paper and excluding tissue paper), communication paper, packing paper and newsprint paper) from wood pulp, used paper and other fibers, excluding business to manufacture special paper such as hybrid paper etc. and sanitary paper)	The value obtained by A/B A: Energy consumption in the process to manufacture paper B: Production volume	6626 MJ/t or less
7	**Convenience Store**	The value obtained by A/B A: Total amount of electricity consumption for the store. B: Annual sales of the store	845 kWh/mmYen or less
10	**Super Market**	The value obtained by A/B or weighted average of those values of each hotel in the term of energy consumed for each hotel when plural hotels are operated. A: Energy consumption (unit: GJ) B: Sum of the following values (1) – (3) (1) 2.543 multiple the total floor area (unit: m2). (2) 0.684 multiple the annual total of business hours (unit: hours) (3) 5.133 multiple the total length of cold showcase (unit: feet)	0.799 or less

Source: https://www.asiaeec-col.eccj.or.jp/wpdata/wp-content/uploads/ecguideline-table.pdf