Overview of the recent Building Energy Efficiency related situation in Japan and ASEAN

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1.Histry of the discussion of BEC(Building Energy Codes)/GBC(Green Building Codes) between Japan &ASEAN

2.Major points of discussion now

(1)Mandatory Building Codes

(2)Net-zero energy consumption in buildings

3.Possible synergy between BEA & ECCJ

(1)ECCJ's side

- ➢Simulation tool (Energy Conservation target Tool etc.)
- ➢EE&C Benchmarking System for various use of building

(2)BEA side

- ➢Approach and measures useful for Asia-Pacific Region

<Abbreviation>

AEA: ASEAN Energy Award AJEEP: ASEAN & Japan Energy Efficiency Program, BEA: Building Efficiency Accelerator, BEC: Building Energy Codes, ,EE&C: Energy Efficiency & Conservation, GBC: Green Building Codes

History of the discussion of BEC/GBC between Japan & ASEAN

		AJEEP Activity		SEforALL Activity	
Date	WS name	AEA	BEC /GBC		BEA
Dec. 2013	ECAP4	・Green Building Category ・Evaluation Standard revision (Energy Management Category)			
Dec. 2014	ECAP7	Discussion of CASBEE (Green Building Category)			
Oct. 2015	SEforALL Tokyo Forum			・Philippines：GBC established in 2015 ・Indonesia：Green Building Regulation (Jakarta City)	1) City-led policies for Building Energy Efficiency 2) Smarter Urban transport infrastructure 3) Optimization of the District Energy System 4) Way Forward for the Promotion of EE&C in the Expanded City Area
Nov. 2015	ECAP9	Evaluation Standard & BOJ Procedure	・present status of JBEC & ASEAN BEC ・Best Practice case study (Tokyo MG)		

Date	WS name	AEA	BEC/GBC	BEA
Feb. 2017	SEforALL Tokyo WS		・Law Enforcement of the BEC in Japan ・Calculation method of the primary energy consumption ・introduction of the benchmark system	・BEC-driver for the EE&C for the building ・BEC enforcement-poor status in SEA ・Refer to the BP in country, city and district
Nov. 2017	ECAP14	・BOJ procedure-ML's proposal ・ZEB -Special Submission sub-category	・Implication of the mandatory BEC execution in Japan ・Benchmark system in Japan-work in progress	

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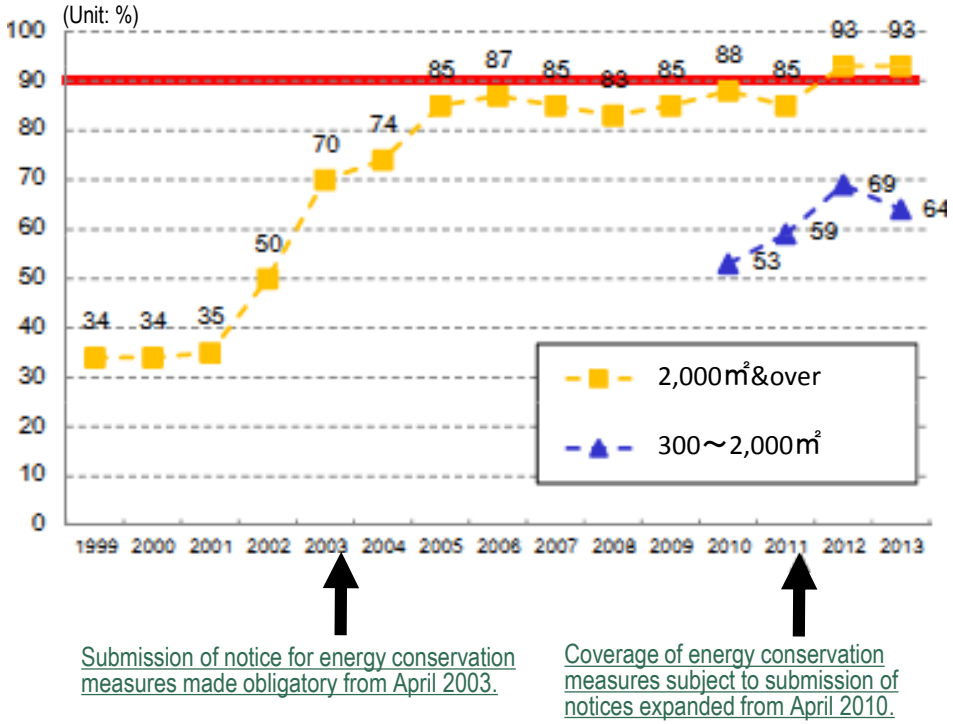
Transition of Compliance Rates of EE&C Standards for Housing and Building

➢The compliance rate for the Energy Conservation Standards of new buildings is **about 90%**, which is quite high, but the compliance rate of newly built residential housing is only **about 40% to 50%**.

(The reason for the rise in the compliance rate for residential housing from 2009 to 2010 was due to the impact of the Residential Eco Point program.)

Transition of compliance rate* with Energy Conservation Judgment Standards for newly constructed building structures (1999 standards)

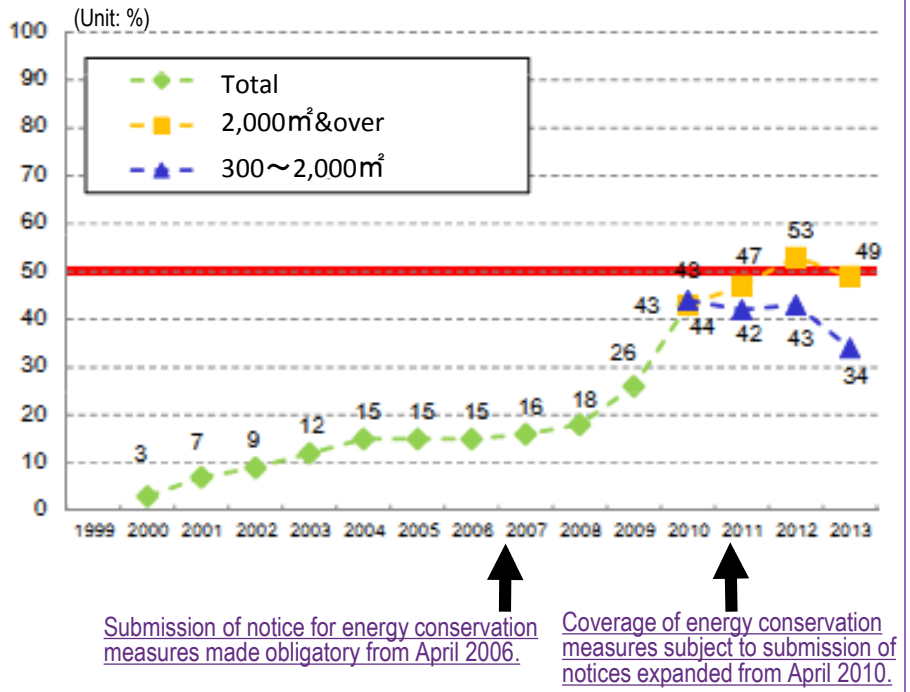


Submission of notice for energy conservation measures made obligatory from April 2003.

Coverage of energy conservation measures subject to submission of notices expanded from April 2010.

* Proportion of floor areas in building structures, which complied with the Energy Conservation Standards (1999 standards), for building structures (at least 2,000㎡) constructed and verified in the applicable year .

Transition of compliance rate* with Energy Conservation Judgment Standards for newly constructed residential housing (1999 standards)

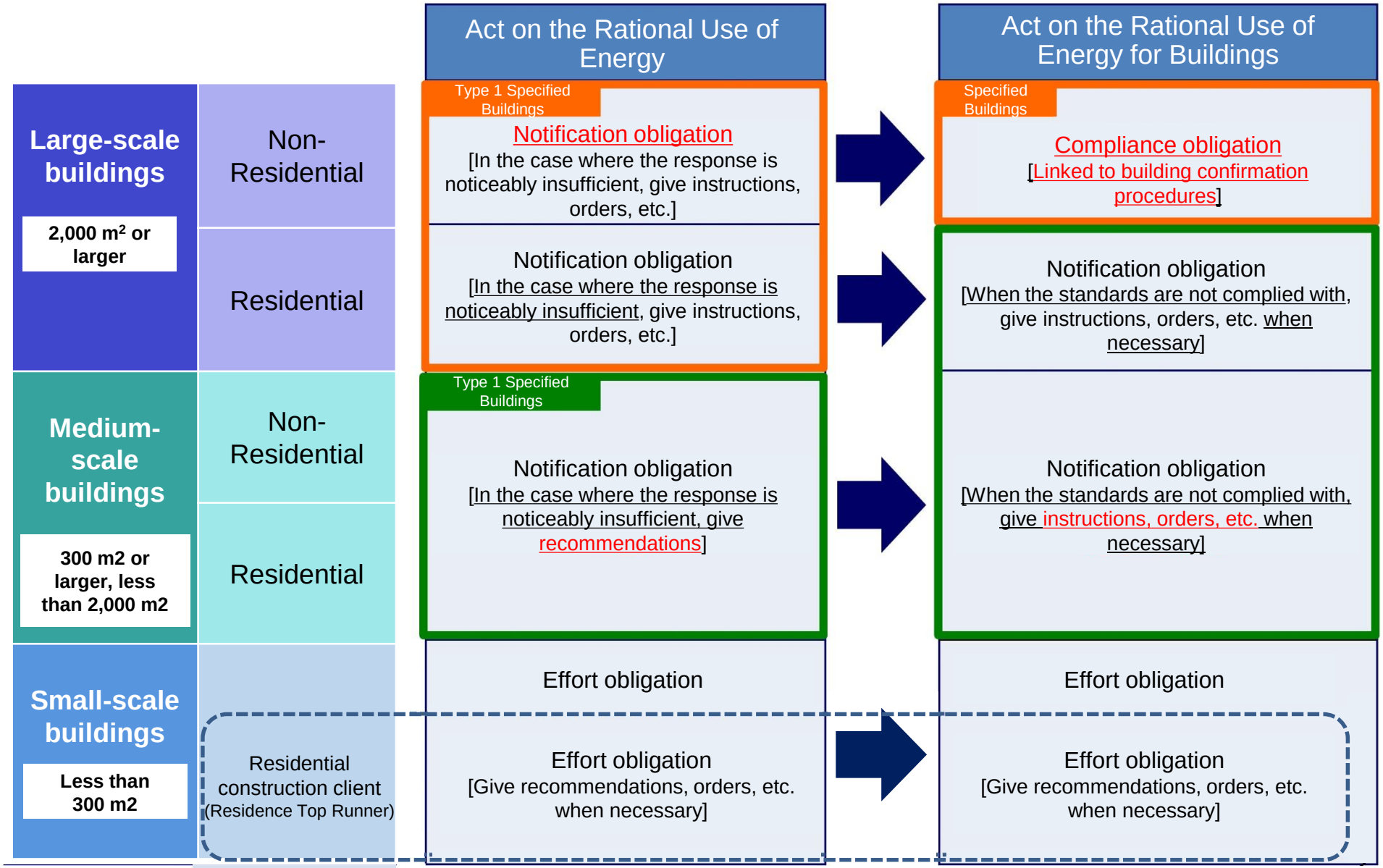


Submission of notice for energy conservation measures made obligatory from April 2006.

Coverage of energy conservation measures subject to submission of notices expanded from April 2010.

* Estimated values, based on a survey for the distribution of residential housing units according to the levels of thermal insulation, were used as the figures up to FY2009 and estimated values (tentative values), based on the number of units for which residential housing Eco Points were issued (single dwelling residential housing) and the number of notifications submitted (for multiple dwelling residential buildings, etc.) under the Energy Conservation Law, were used as the figures for FY2010.

Change of the regulation of BEC after 2017 in Japan



Status of BEC/GBC in ASEAN & Effective use of AEA for the improvement of the situation

➢ Status is different country by country . ASEAN tries to use award system as a driving force.

<BEC/GBC related status quo>

		Brunei	Cambodia	Indonesia	Lao PDR	Malaysia	Myammar	Phillipines	Singapore	Thailand	Vietnam
EC Law/ Regulations	Exsistence	○	UP	○	UP	○	Draft	○	○	○	○
	(Enforced in)	2014		2009		2008			2013	1992	2011
Building Efficiency Codes	Mandatory			○				○	○	○	○
Labeling System	EEBuilding										
	Green Building			○		○			○	○	
Award program	EEBuilding			○		○		○		○	○
	Green Building			○		○			○	○	

<AEA – Driving force of the BEC's realization>

Category	Sub-category
Energy Efficient Building	New & Existing Building
	Retrofitted Building
	Tropical Building
	Special Submission
	Cutting Edge Technology
	Appropriate Technology
	ZEB

Category	Sub-category
Energy Management	Building -Small & Medium
	ditto -Large
	Industry- small & Medium
	ditto -Large
	Special Submission
	Building
	Industry

Category	Sub-category
Green Building	Small & Medium Building
	Large Building
	ZEB

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Realization Plan of the ZEB

➢ Japan's Strategic Energy Plan (adopted at the Cabinet Council in April 2014) establishes the following goals to realize and promote of ZEBs and ZEHs:

Future visions

【Residential Building】

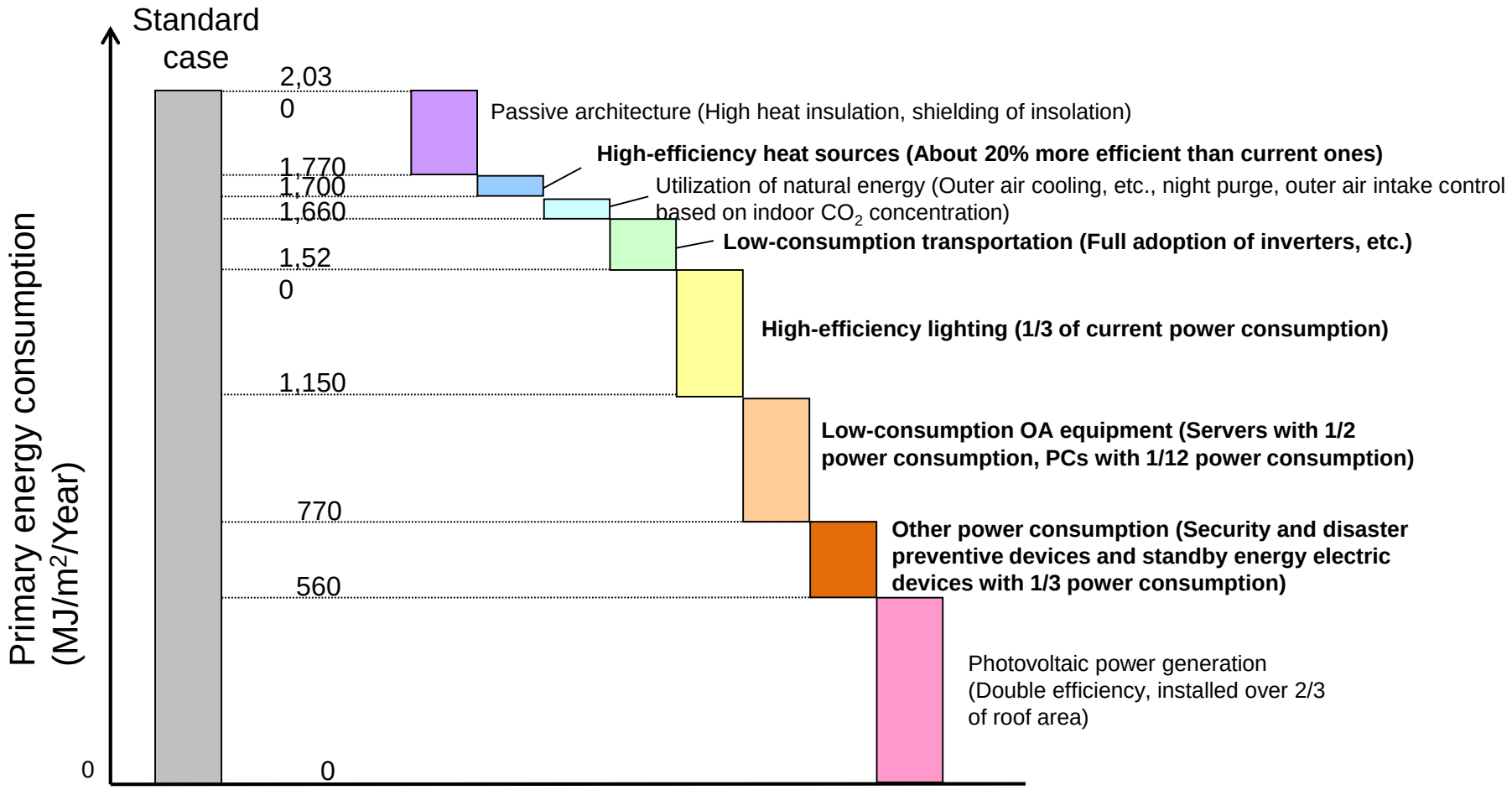
- **Target :** **net – Zero - Energy Houses (ZEH) available by 2020.（standardized type , newly built only)**
- **Realization :** **ZEHs in average newly built houses by 2030.**

【Commercial Building】

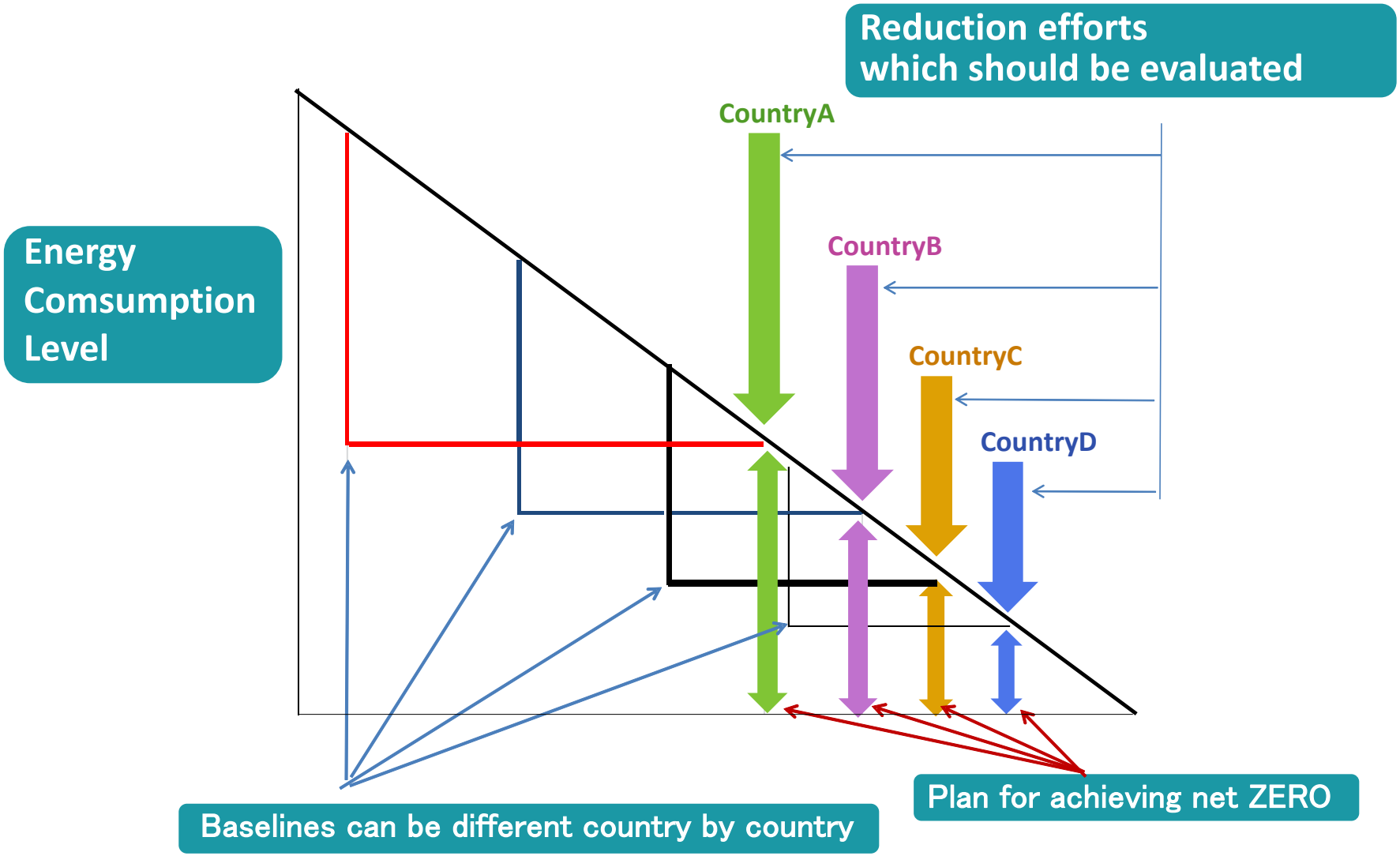
- **Target :** **net – Zero - Energy Buildings (ZEB) in new public buildings by 2020.**
- **Realization : ZEBs in average newly constructed public and private buildings by 2030 .**

ZEBs Never Impossible

- Various Energy Conservation Technologies contributable to ZEBs and Their level of magnitude



Energy Reduction Efforts have to be evaluated country by country



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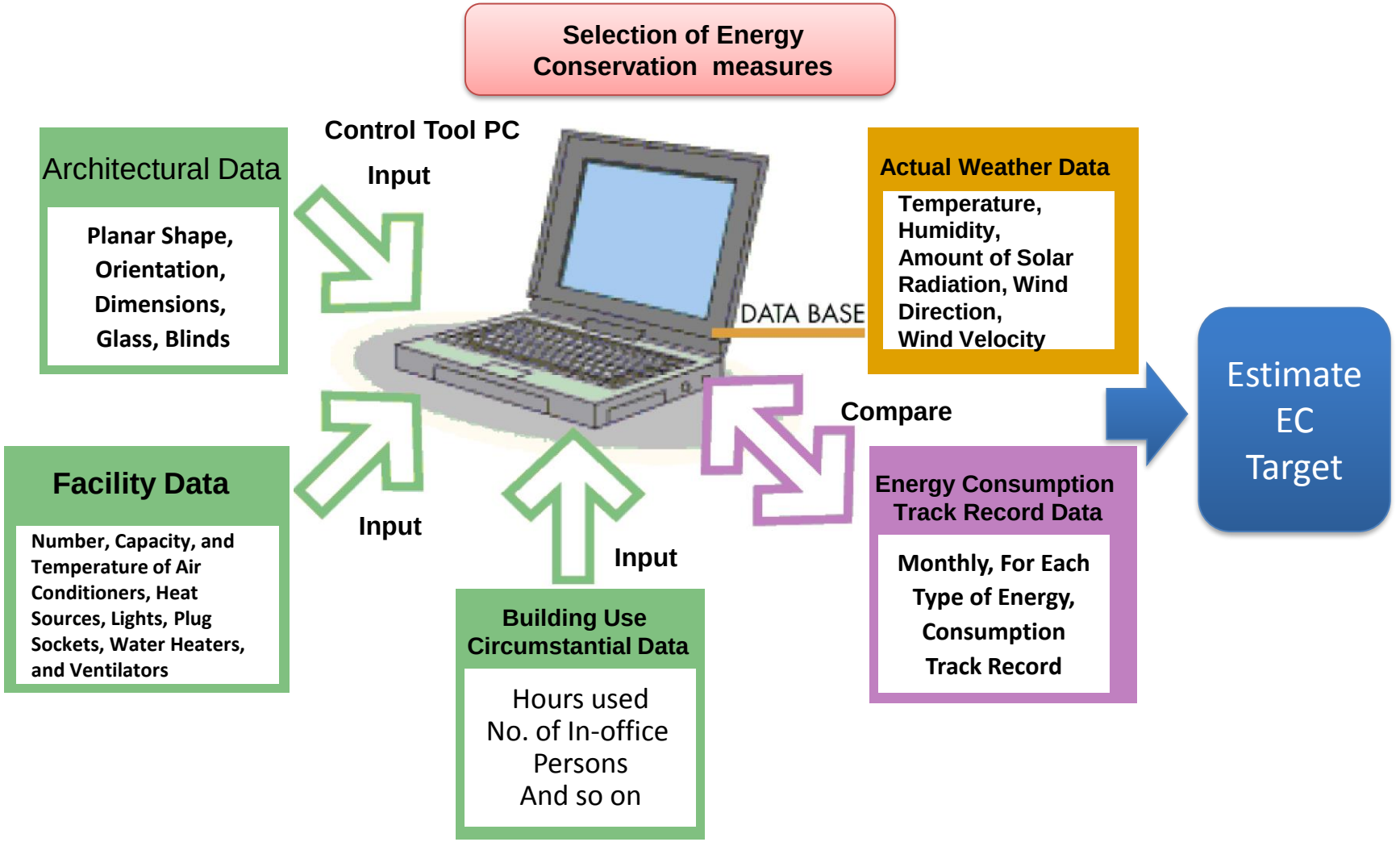
Use of Energy Consumption Target Tool (ECTT)

➢ **Some application tools are available for free. Now English version is expected.**

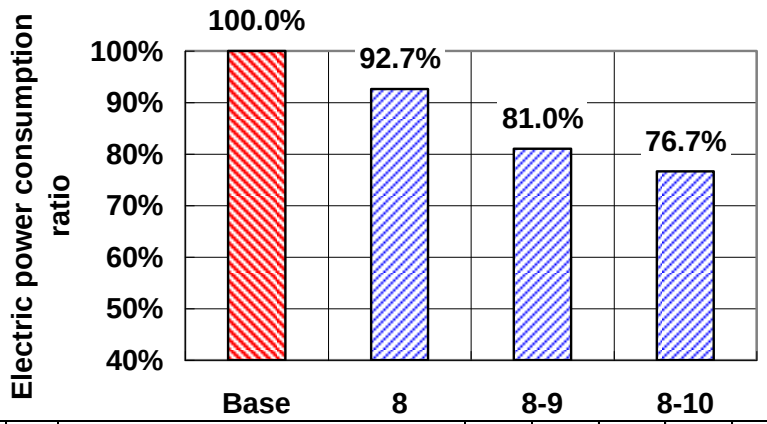


<Reference> Simulation Results using ECTT

Results of step by step Calculation (1) Office

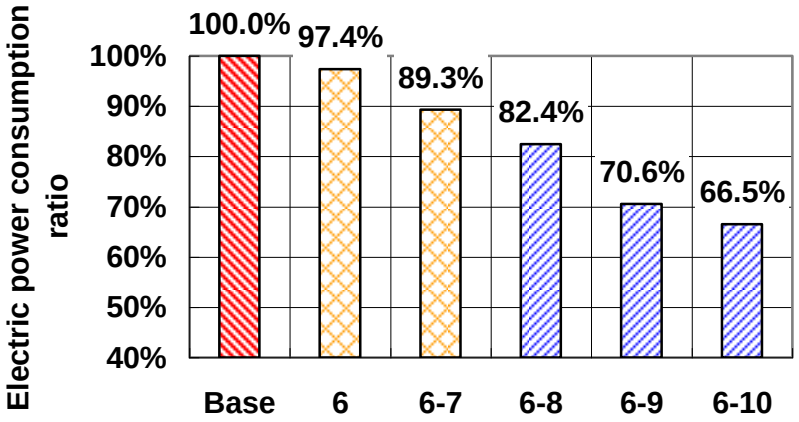
ECTT/ Weather data :Naha Japan

The effect by high efficiency equipment & inverter



	NO.	Items	Base	8	8-9	8-10	Note
	1	**Adjust Rm tem 24**	○	○	○	○	
A	2	Adjust Rm tem					
A	3	Reduce outdoor air					
A	4	Reduce lighting (numbers & using hour)					
A	5	Reduce outlet (power & using hour)					
B	6	Human motion sensors					
B	7	Hf lighting					
B	**8**	**Total heat exchangers**		○	○	○	
C	**9**	**Install an inverter**			○	○	
C	**10**	**High-efficiency equipment**				○	

The effect by lighting outlet, high efficiency equipment & inverter



	NO.	Items	Base	6	6-7	6-8	6-9	6-10	Note
	1	**Adjust Rm tem 24**	○	○	○	○	○	○	
A	2	Adjust Rm tem							
A	3	Reduce outdoor air							
A	4	Reduce lighting (numbers & using hour)							
A	5	Reduce outlet (power & using hour)							
B	**6**	**Human motion sensors**		○	○	○	○	○	
B	**7**	**Hf lighting**			○	○	○	○	
B	**8**	**Total heat exchangers**				○	○	○	
C	**9**	**Install an inverter**					○	○	
C	**10**	**High-efficiency equipment**						○	

A: Change of Using & Operating of equipment (10 items)

B: A small-scale repair work (6 items)

C: A large-scale retrofitting **work(12 items)**

ECCJ/AJEEP JAN/2014

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Turning points of EE&C standards

- It became difficult to continue decreasing the energy consumption intensity by 1% or more in yearly average.
- Superior business operators who had already achieved considerable energy conservation are not appropriately assessed because it became difficult for them to achieve 1% decrease.

Benchmark system started to be studied as a new assessment index.

2008: Benchmark system stated to be studied
平成20年：ベンチマーク制度検討スタート

Benchmark system assesses energy conservation of business operators by using indices common to the business types. Under the benchmark system, business operators endeavor to achieve the target (level to be aimed at) to realize energy

2009: Committee for studying benchmark system

2009-2010: Industry sector
Benchmark system was introduced.

<Industry sector: 6 business types 10 fields>
(1) Steel industry by blast furnaces
(2) Ordinary steel manufacturing industry by electric furnaces
(3) Special steel manufacturing industry by electric furnaces
(4) Electric utility industry
(5) Cement manufacturing industry
(6) Paper manufacturing industry
(7) Paperboard manufacturing industry
(8) Petroleum refining industry
(9) Basic petrochemicals manufacturing industry
(10) Soda industry

<Business types which started to study introduction in the commercial sector>
6 business types were chosen because their energy consumption and concentration are great.
(1) Convenience store (2) Hotel (3) Department store
(4) Lease office (5) Supermarket (6) Shopping center

2014: Benchmark system for the commercial sector started to be studied on a full-scale at the committee for studying assessment system for energy conservation of the commercial sector

August, 2015: At the summary of Energy Efficiency and Conservation Subcommittee, it was decided that "a benchmark system for the commercial sector should be established".

November, 2015: Prime Minister Mr. Abe instructed to expand the benchmark target business in the commercial sector.

April, 2016: Benchmark system was introduced to the convenience store business.
*** Introduced as the first business from the commercial sector**

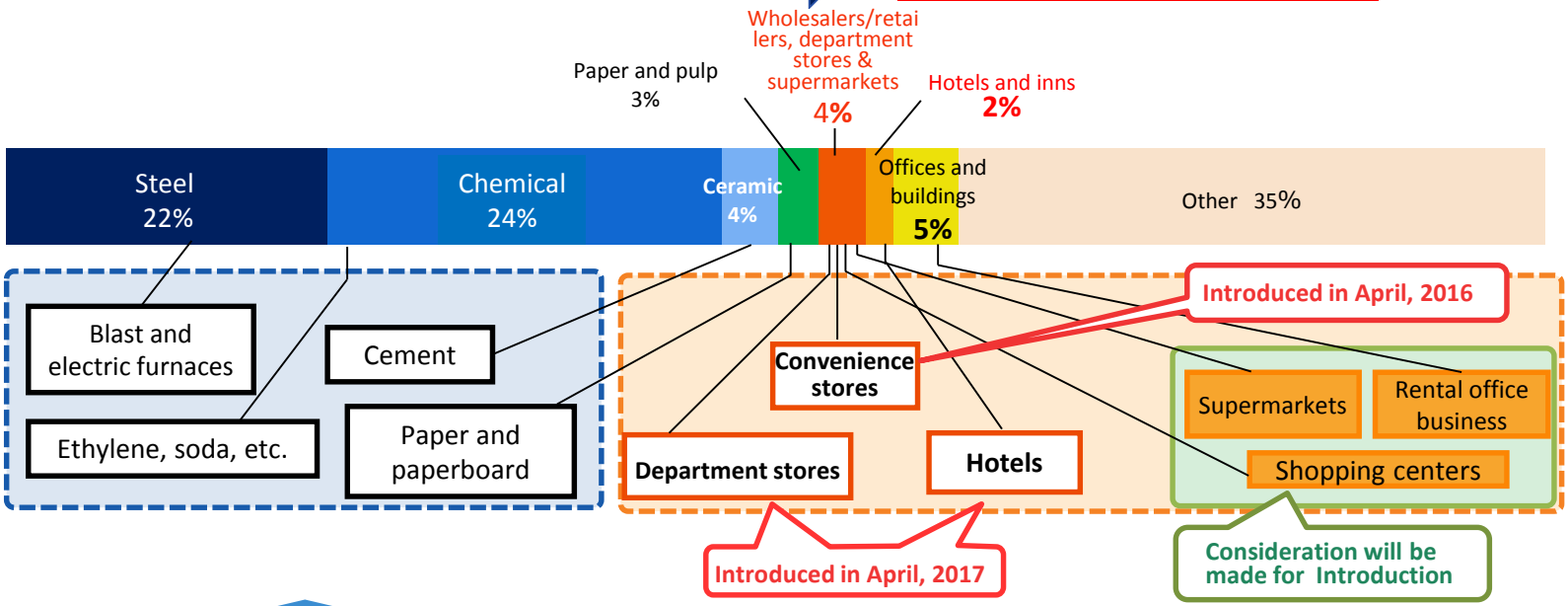
Source: Data of Ministry of Economy, Trade and Industry

Expansion of Benchmark system : Commercial Sector

- The 1st expansion of application (6 industries) realizes the coverage rate of 65% and the 2nd expansion (schools, hospitals, etc.) will increase it up to 75%.
  → Expand from the applicable fields as soon as possible to aim at 70%.

Currently 59.4% is covered.

Aim to target 70% of all the industries.



Industrial Sector: Review of Target Level

Business Sector: Expansion of Target Industries

Source: Ministry of Economy, Trade and Industry

Benchmark System in Building Sector

- Benchmark index is considered as not only “intensity” but also “ratio of the energy consumption of the concerned building to the average of the energy consumptions of the buildings” in the specified category of buildings.
- The standard level is determined based on that 10%-20% of the buildings of the concerned category can satisfy the level.
- According to the feature of the buildings, the parameters correlated with energy consumption are different according to the type of buildings.
- In consideration of these circumstances, three kinds of approaches shown below are taken for the benchmark system for building energy efficiency in Japan.

	Energy Intensity	Actual / average of the group	Energy Saving ratio
Applied categories of buildings	Convenient stores Shopping Center	hotels, department stores, food supermarkets	Tenant office
Reasons for application	Small variation on the feature of buildings	Many parameters correlate with energy consumption	Varies widely due to variation of tenants

Source : METI website

Summary

1.Histry of the discussion of BEC/GBC in SEA

- In 2015 AJEEP and SEforALL were merged into one working body i.e. BEC/GBC has been discussed in terms of Mandatory or not in Japan and ASEAN.
- Since 2017 AEA program is being used for a catalyst or leverage for BEC/GBC promotion.

2.Major points of discussion now

(1)Mandatory Building Codes

- Japan just introduced mandatory compliance to the law in 2017
- 6 countries have mandatory building regulation in ASEAN

(2)Net-zero energy consumption in buildings

- Strategic Energy Plan in 2014 specifies realization of net-zero energy building in newly built average (both in terms of residential and commercial building)
- ASEAN try to promote ZEB-ready building in accordance with respective countries' situation.

3.Possible synergy between BEA & ECCJ

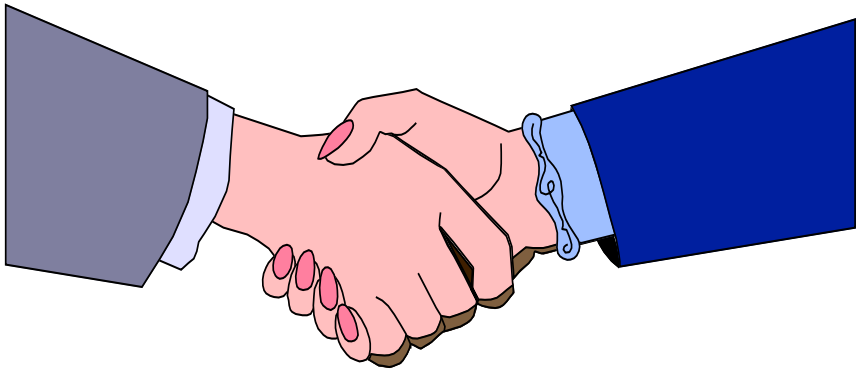
(1)BEA side

- What kind of policies & Actions are effective and applicable for Asia-Pacific Region

(2)ECCJ's side

- Technical tools : ECCT(Energy Conservation Target Tool), ESUM(Energy Specific Unit management Tool) etc.
- EE&C Benchmarking System for various use of building

Thank You Very Much



省エネのシンボルです
SMART CLOVER

For More Information;
The Energy Conservation Center, Japan
http://www.eccj.or.jp <from 1996>

Asia Energy Efficiency and Conservation Collaboration Center (Established in April 2007)
http://www.asiaeec-col.eccj.or.jp

Japanese Business alliance for Smart Energy-Worldwide (Established in October 2008)
https://www.jase-w.org/

The Energy Conservation Center, Japan
Since 1978

The Symbol of Energy Conservation Since 2005ECCJ has been spread the symbol mark with the visual image of a flour-leaf clover which is thought to bring happiness named as "SMART CLOVER", representing everyone's energy conservation activities.