Korea's
Energy Labels & Standards

Transforming Innovation
into Realistic Market Implementation Programs

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Lee Ki-Hyun

KEMCO

khlee@kemco.or.kr

82-10-8228-1448

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Korea Energy Management Corporation

Energy Labels & Standards

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   C. e-Standby Program

1. Energy Labels & Standards Programs

◆ 3 programs in Energy Labels & Standards

Energy Efficiency Label and Standard Program (including MEPS)

- **Mandatory**
- 5-grade labeling & MEPS
- 23 items : Refrigerators, Air conditioners, Automobiles, etc

Energy Labels & Standards

High-efficiency Equipment Certification Program

고효율기자재

- **Voluntary**
- 41 items : Transformers, Pumps, LED Lightings, etc

e-Standby Program

에너지절약

- **Voluntary -> Mandatory**
- Standby Korea 2010
- 20 items : PCs, TVs, STBs, etc

A. Energy Efficiency Labels and Standards

◆ **For enhancement of energy efficiency**

◆ **Mandatory program (since 1992)**

- Attachment of Efficiency Grade Label
  - From the 1st grade to the 5th grade
- Application of MEPS below the 5th grade

◆ **Target products (23 items)**

- Widespread and energy intensive products
  - Refrigerators, air conditioners, washing machines, lighting equipments, 3 phase induction motors, automobiles, etc

◆ **Promotion policy**

- Public procurement service
- Mandatory use in public and specified buildings

B. High-Efficiency Equipment Certification

◆ **For early stage market of high efficiency products**

◆ **Voluntary program (since 1996)**
  - Attachment of High efficiency Equipment Label
  - Issue of High efficiency Equipment Certificate

◆ **Target products (41 items)**
  - Industrial products with low deployment rate, but great energy conservation potential
    - Transformers, pumps, fans & blowers, LED lightings, etc

◆ **Promotion policy**
  - Equipment supporting rebate
  - Public procurement service
  - Mandatory use in public and specified buildings, etc

C. e-Standby Program

◆ **For reduction of standby power**
  - **Standby Korea 2010 :** Reduction of standby power of all products below1 watt by year 2010

◆ **Voluntary program (since 1999)**
  - Attachment of Energy Saving Label

◆ **Target products (20 items)**
  - Products with significant standby power
    - Office equipments : PCs, monitors, printers, scanners, etc
    - Consumer electronics : TVs, set top boxes, VCRs, etc

◆ **Promotion policy**
  - Public procurement service
  - Mandatory use in public and specified buildings
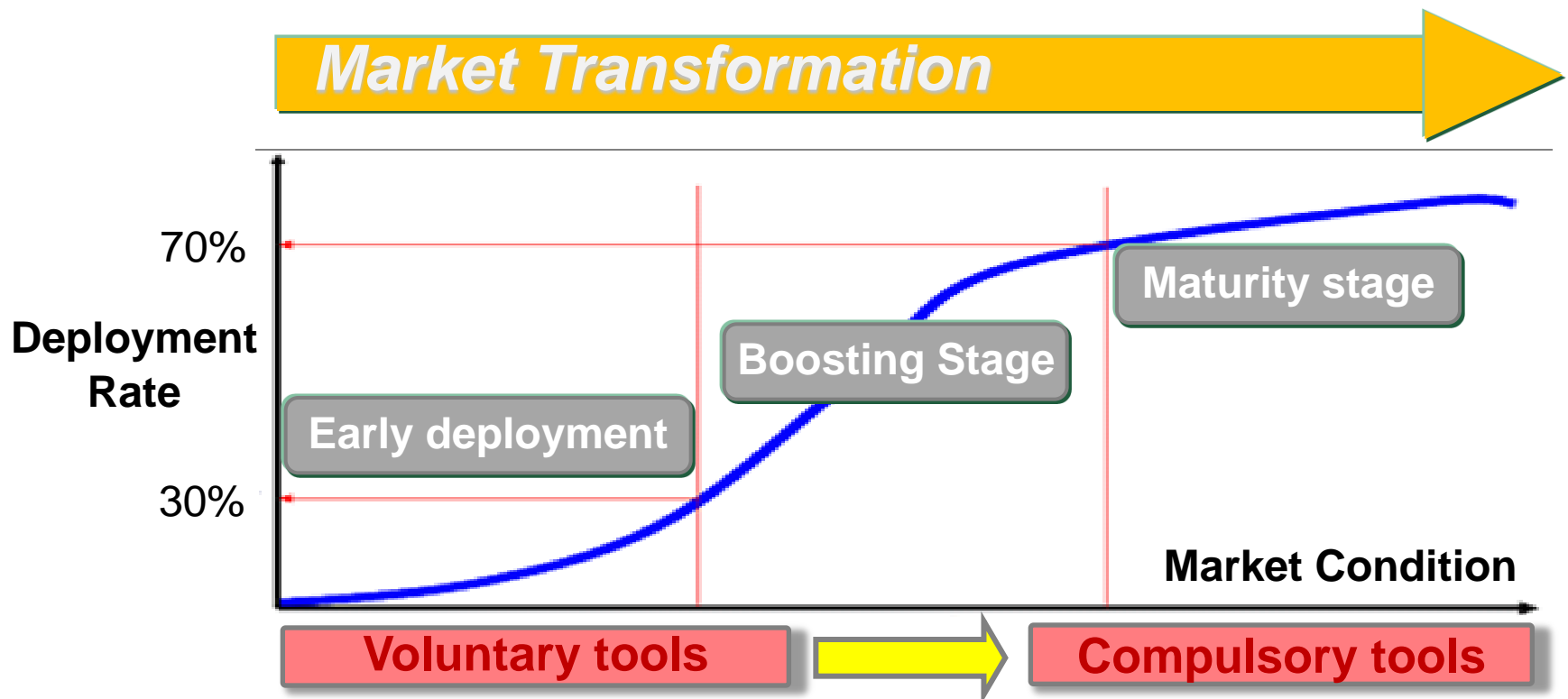
에너지절약

Intervention & accomplishments

1. Pre-intervention methodologies

2. Post-intervention methodologies

3. Accomplishments

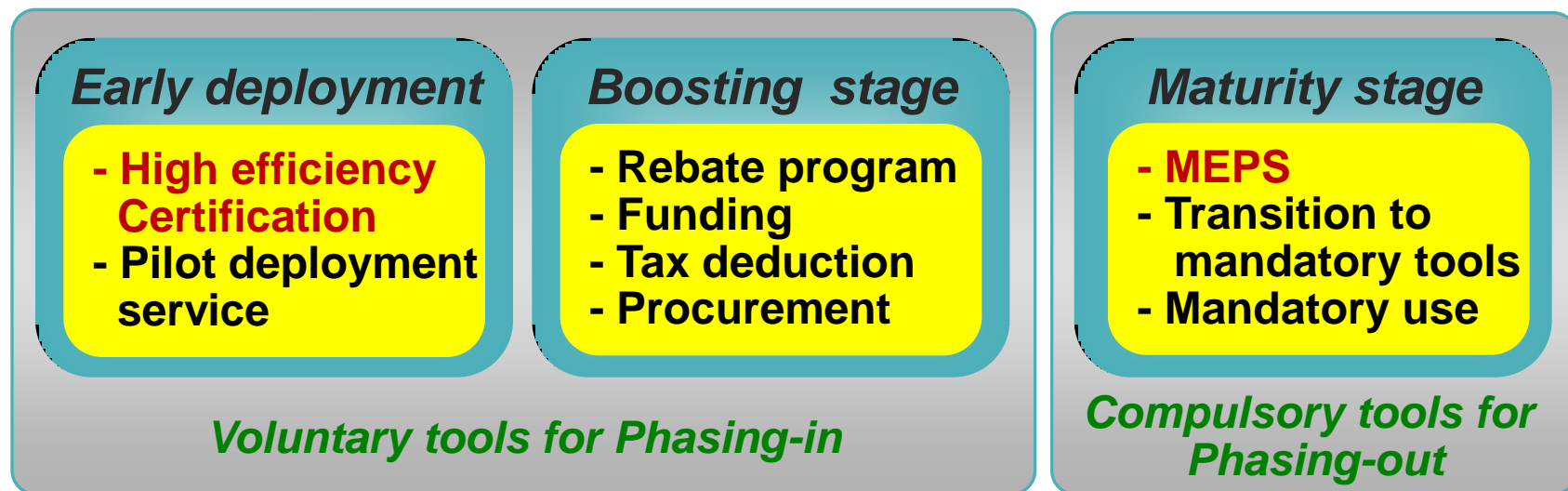# 1. Pre-intervention methodologies

◆ **Various intervention tools**

- Implementation of associated and mixed policy tools
  - Sequential or integrated implementation of voluntary and compulsory intervention is needed to transform the market.

Market Transformation

Deployment Rate

70%

30%

Early deployment

Boosting Stage

Maturity stage

Market Condition

Voluntary tools → **Compulsory tools**

1. Pre-intervention methodologies

◆ **Selection of Intervention tools**
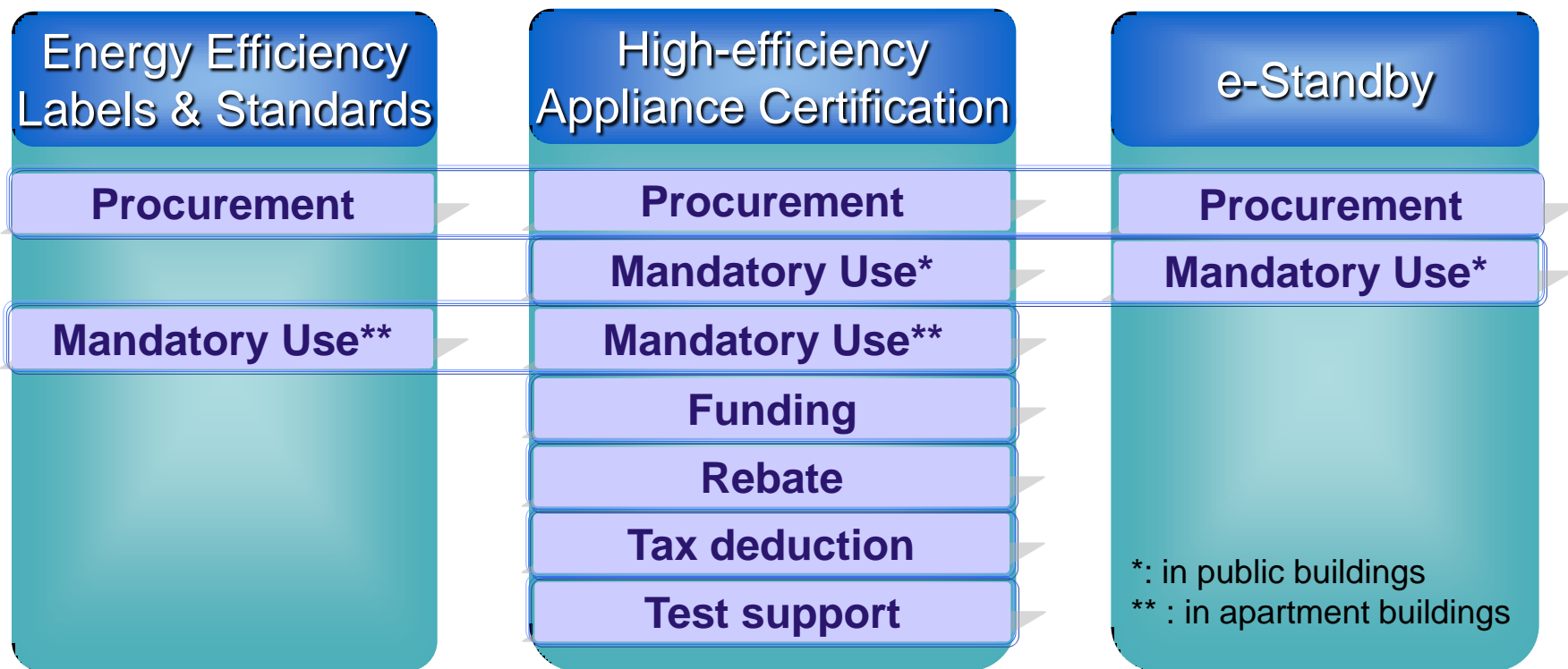
- Market research on current market state and prospects
  - Sales data analysis and test as basic data for management
- R&D projects for enhancement of efficiency
  - The result of the projects is reflected on Energy Labels and Standards and manufactures can participate in the projects.
- Case study on other countries' best practices

Early deployment	*Boosting stage*	*Maturity stage*
- High efficiency Certification - Pilot deployment service	- Rebate program - Funding - Tax deduction - Procurement	- MEPS - Transition to mandatory tools - Mandatory use
Voluntary tools for Phasing-in		*Compulsory tools for Phasing-out*

1. Pre-intervention methodologies

◆ **Promotion tools**

- Suitable promotion policy tools for successful intervention
  - More promotion tools are need in early deployment stage compared with boosting or Maturity stage.

Energy Efficiency Labels & Standards	High-efficiency Appliance Certification	e-Standby
Procurement	Procurement	Procurement
	Mandatory Use*	Mandatory Use*
Mandatory Use**	Mandatory Use**	
	Funding	
	Rebate	
	Tax deduction	*: in public buildings
	Test support	** : in apartment buildings

2. Post-intervention methodologies

◆ **Market Research**
  - Survey on the actual effect of intervention tools toward market transformation after implementation

◆ **Sales Data Analysis and Evaluation**
  - Computing and analyzing sales data annually reported by companies and evaluating the effect of intervention
    - Check the increase of market share and changes in efficiency grade distribution condition of target products of intervention
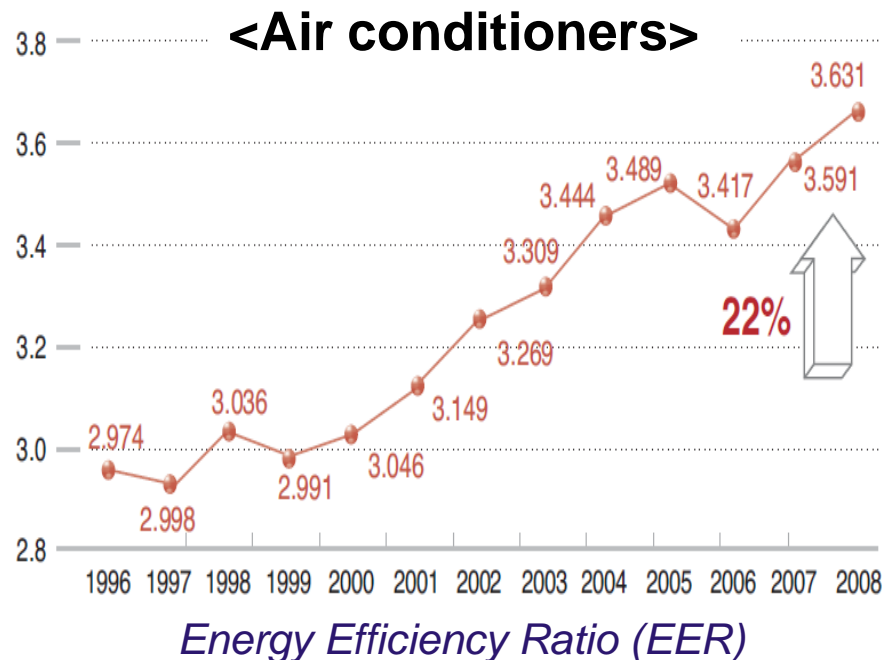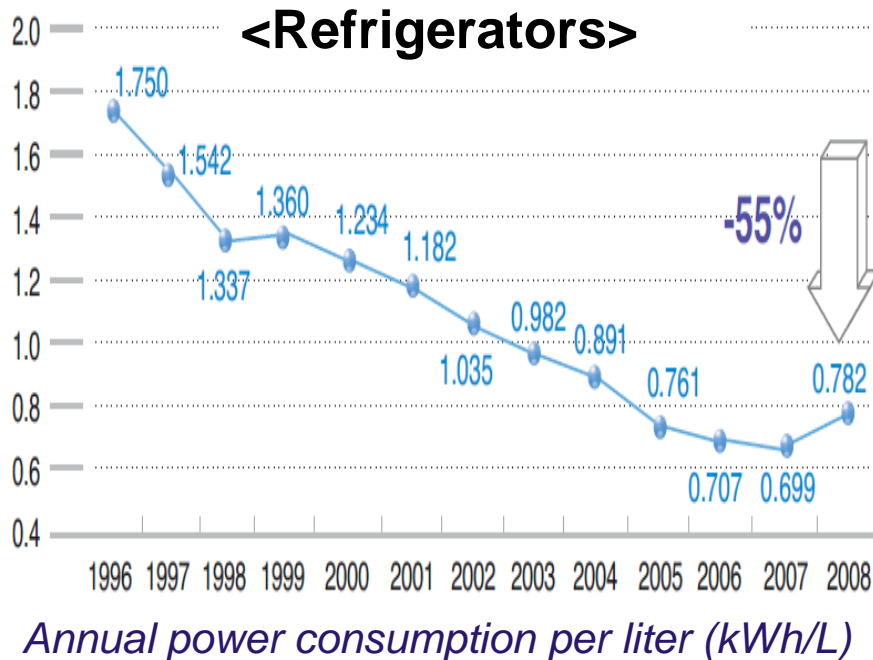
◆ **Monitoring program**
  - Prohibition of distribution of improper products that do not meet the standards improving the program's reliability
  - Annual regular compliance test and irregular test
    - Issues can be arisen from market research or consumers

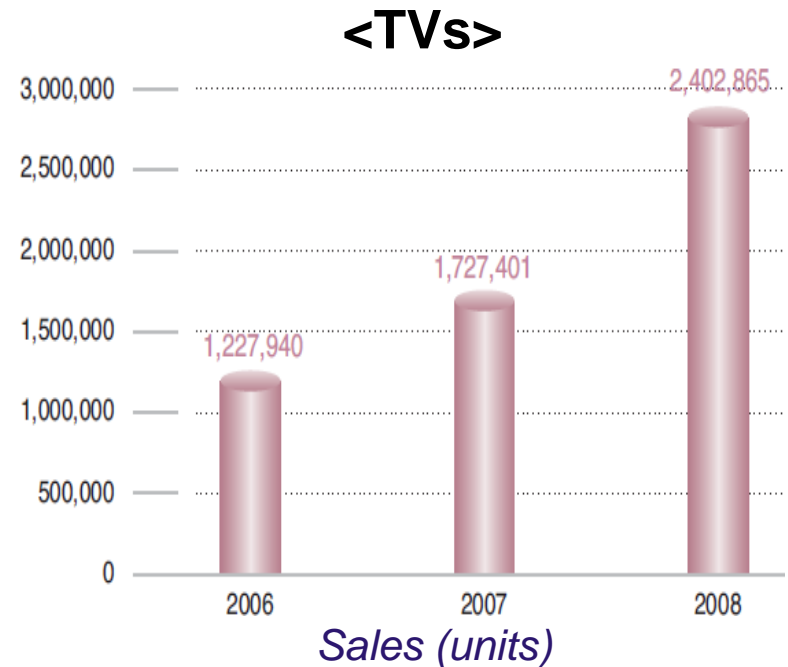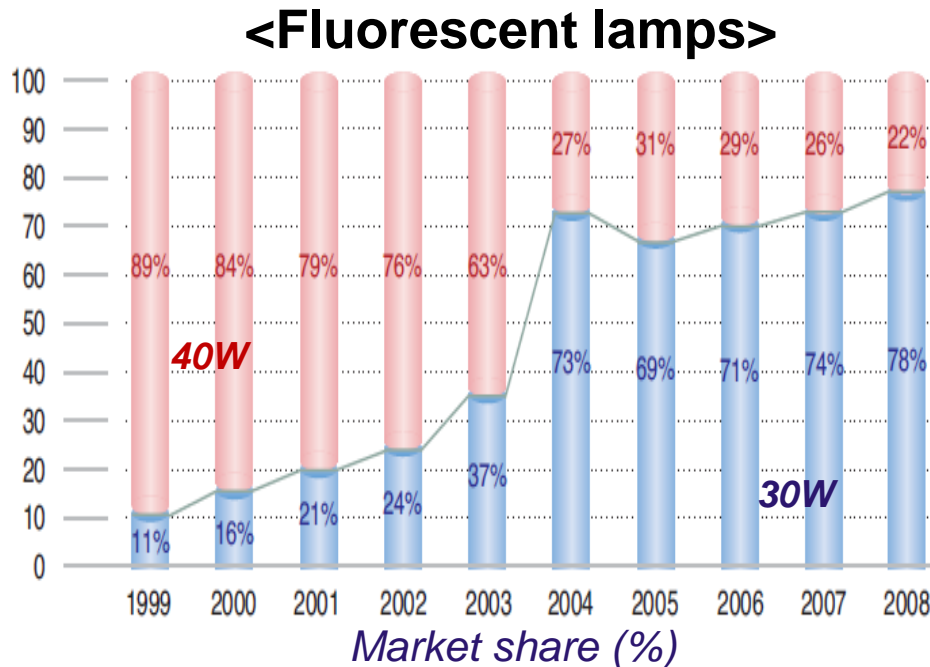# 3. Accomplishments

◆ **Enhancement of energy efficiency**

■ white goods such as refrigerators and air conditioners are good example of successful intervention.

■ Refrigerators' energy consumption has decreased by 55%.
■ Air conditioners' energy efficiency has increased by 22%.

<Refrigerators>

2.0
1.8 — 1.750
1.6 — 1.542
1.4 — 1.360 1.234
1.2 — 1.337 1.182
1.0 —   1.035 0.982 0.891
0.8 —   0.761   0.782
0.6 —   0.707 0.699
0.4

-55%

1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008

Annual power consumption per liter (kWh/L)

<Air conditioners>

3.8 —   3.631
3.6 —   3.489 3.417 3.591
3.444
3.4 —   3.309 3.269
3.2 —   3.149
3.0 — 2.974 3.036 2.991 3.046
2.998
2.8

22%

1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008

Energy Efficiency Ratio (EER)

3. Accomplishments

◆ Deployment of energy efficient products

- Dissemination of energy efficient products phasing out low efficiency ones through management of standards.
  - Deployment of 32W fluorescent lamps instead of 40W lamps
  - Increase in sales of energy saving TVs that meet standards

<Fluorescent lamps>

40W

30W

89% 84% 79% 76% 63% 27% 31% 29% 26% 22%

11% 16% 21% 24% 37% 73% 69% 71% 74% 78%

1999 2000 2001 2002 2003 2004 2005 2006 2007 2008

Market share (%)

<TVs>

2,402,865
1,727,401
1,227,940

2006 2007 2008

Sales (units)

Major developments

1. Additional information on labels

2. Indication of electric charges

3. Expansion of Warning Label Scheme

1. Additional information on labels

◆ **CO_2 emissions and electric charges on labels**

- Reliable information on emissions and energy use
  - Consumer education on GHG emissions caused by use of energy consuming products is essential.
  - More practical information on energy consumption to help consumers select high efficiency products in the market

Design improvement
From Jan. 1. 2008

CO_2 emissions
From July. 1. 2009

Electric charges
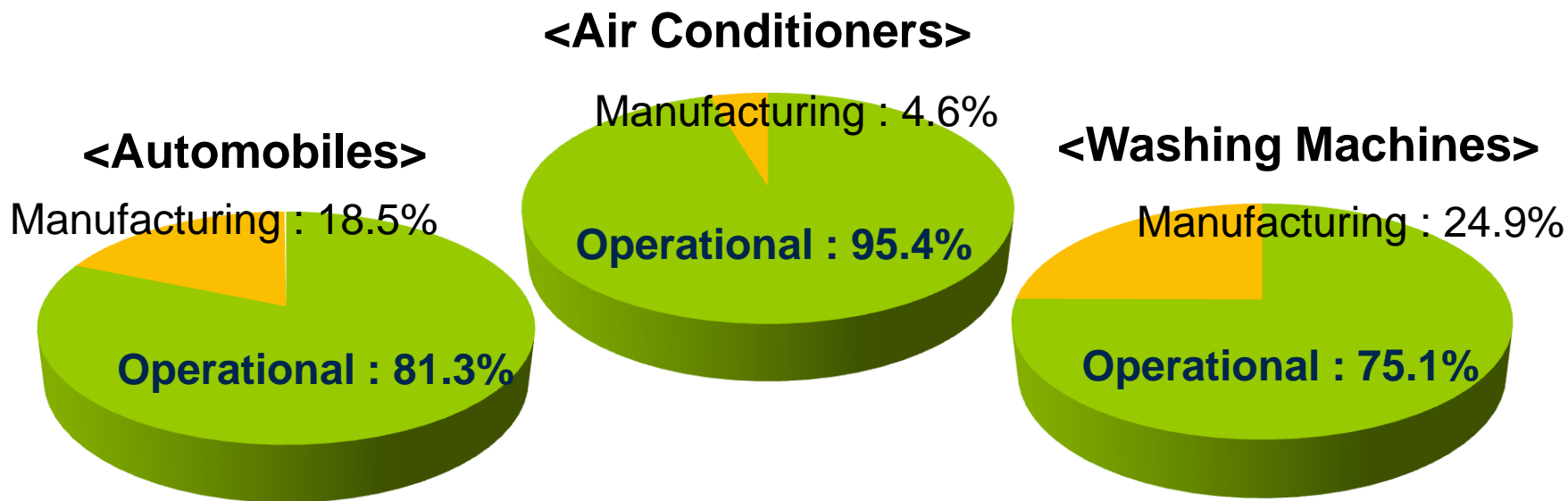From July. 1. 2010
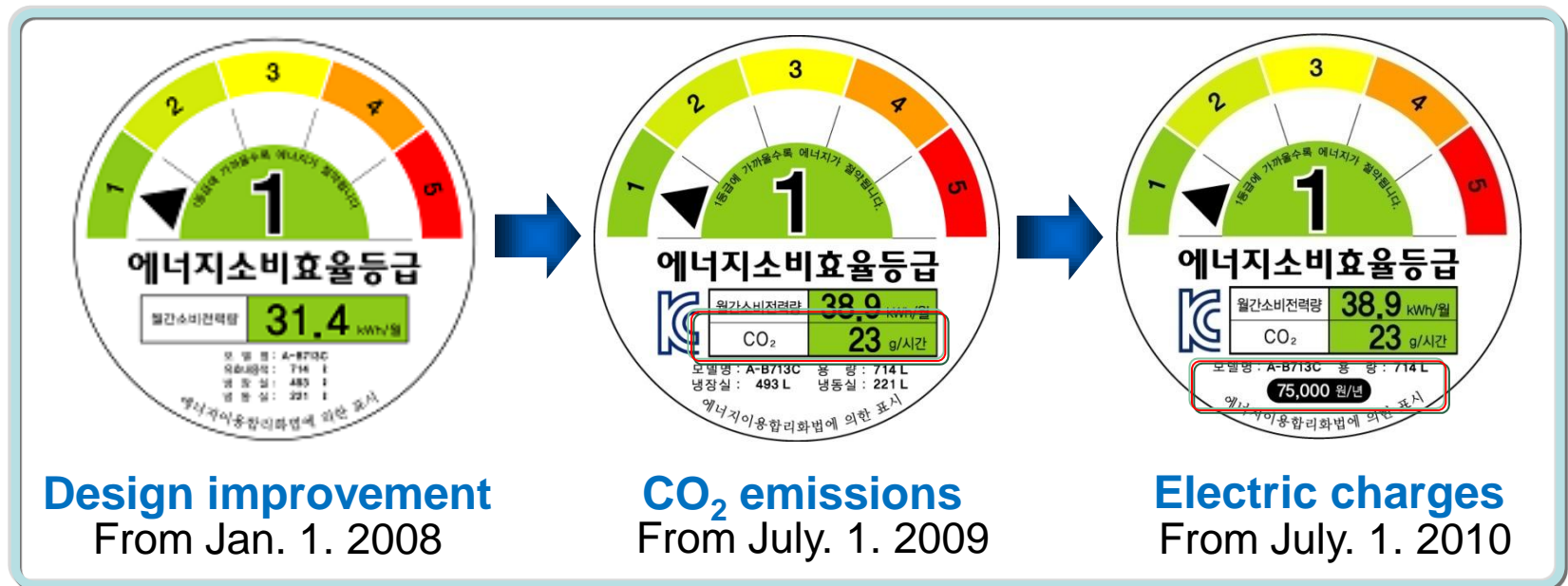
A. *Indication of CO_2 emissions*

◆ **CO_2 emissions on the labels** (since July 1, 2009)

- New measure to establish a sustainable production and consumption culture for green growth of Korea
  - More detailed information for consumers education

- Emission factor and CO_2 emissions (1Wh = 0.425g of CO_2)
  - Average GHG emission factor during these five years

◆ **World's first CO_2 label for electrical goods**

- Korea became the first country to implement CO_2 label for operational stage of various electronics.
  - The first target was automobiles implemented in 2008, and the extent of this policy has expanded to electrical goods.
  - Almost 128 million models from 19 products is managed by this more effective policy, for energy consuming products.

A. Indication of CO$_2$ emissions

◆ **Effectiveness of policy tools**

- Energy using products emit 75~95% of CO$_2$ at their operational stage and other stages are less relatively.
  - Automobiles : 81.3%, Air Con. : 95.4%, Laundry : 75.1%

- This CO$_2$ labels indicate the emission at the operational stage only for best effectiveness with the minimal expense.

<Air Conditioners>

Manufacturing : 4.6%

<Automobiles>

Manufacturing : 18.5%

Operational : 95.4%

<Washing Machines>

Manufacturing : 24.9%

Operational : 81.3%

Operational : 75.1%

B. Indication of electric charges

◆ **Information on electric charges**

- More practical information for end-users

  - Information on energy consumption of the products is neither familiar nor comprehensive to general consumers and even somewhat hard to fully understand.

  - Estimated electric charges are the most practical and useful information almost every consumers actually need.

◆ **Indication on labels** (from July 1, 2010)

- Reliable measuring & calculation method of electricity usage and unit price of electricity is determined through research. (Average unit price of electricity : 1kWh = 160Won)

  - For 13 target products including refrigerators, air conditioners, washing machines and rice cookers

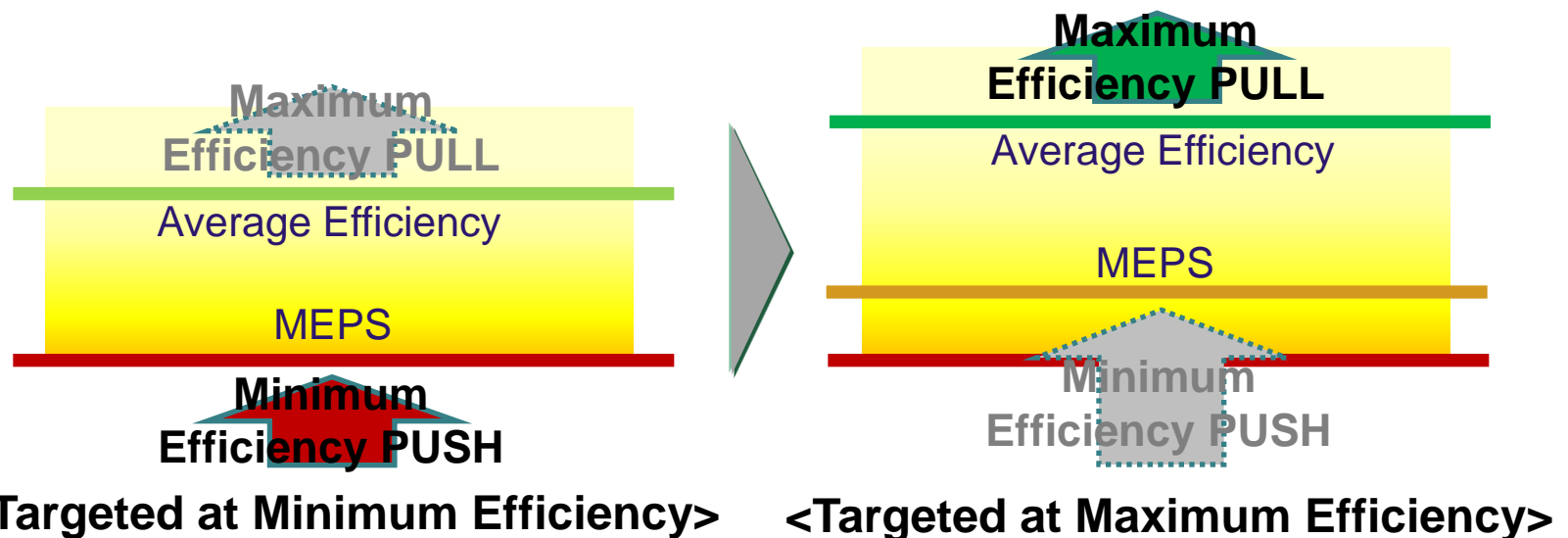# 2. Management of target efficiency

◆ **New policy tool for efficiency pull**

- Efficiency improvement of energy intensive products
  - Strengthened maximum efficiency pull to induce rapid evolution of technology and faster market transformation

- Intervention for actual efficiency of the market
  - Labels and standards program for individual models has its limit in management of actual efficiency and consumption.
  - Management of sales-weighted average efficiency that affect actual energy consumption is significant supplementation.

- Introduction of target efficiency control
  - Fostering companies' annual sales-weighted average efficiency to exceed target efficiency of each target products, in 5 years after announcement of the target

2. Management of target efficiency

◆ MEPS and Target Efficiency

- MEPS : Minimum efficiency push
  - Prohibition of production and sales of inefficient products
  - Management of individual models' efficiency

- Target Efficiency : Maximum efficiency pull
  - Dissemination of most energy-efficient products
  - Management of companies' weighted average efficiency

Maximum Efficiency PULL

Average Efficiency

MEPS

Minimum Efficiency PUSH

Maximum Efficiency PULL

Average Efficiency

MEPS

Minimum Efficiency PUSH

<Targeted at Minimum Efficiency>

<Targeted at Maximum Efficiency>

2. Management of target efficiency

◆ Energy savings

- Estimated energy savings : 644GWh/year (in target year)
  - 90 million dollars can be saved annually after implementation.
  - Exceptional effect on technology advance and efficiency improvement, compared with minimum efficiency push

◆ The progress

- Technical standardization and public hearing to set the target and to determine general management plan (2009~)
  - Strengthening of the 1st grade standards as target efficiency
  * Air con. : 36% higher, Refrigerators : 14% higher (already amended in 2009), Drum washing machines : 30% higher
- Revision of Rational Energy Utilization Act and regulation
  - A legal basis for introduction of new policy tool

3. Expansion of Warning Label Scheme

◆ **Introduction of Warning Label** (since Aug. 28, 2008)

- Mandatory reporting of standby power usage of products
- Mandatory indication of warning label for all products below the announced standby power specification

Voluntary

For products that meet standby power standard

This product fails to meet standby product standard required by the Rational Energy Utilization Act

Mandatory

For products that don't meet standby power standard

◆ **Target products** (as of now)

Date	Target products
2008.8.28	Televisions (1 products)
2009.7.1	Computers, Monitors, Printers, Multi-Function Devices, Set-Top Boxes, Microwave Ovens (6 products)

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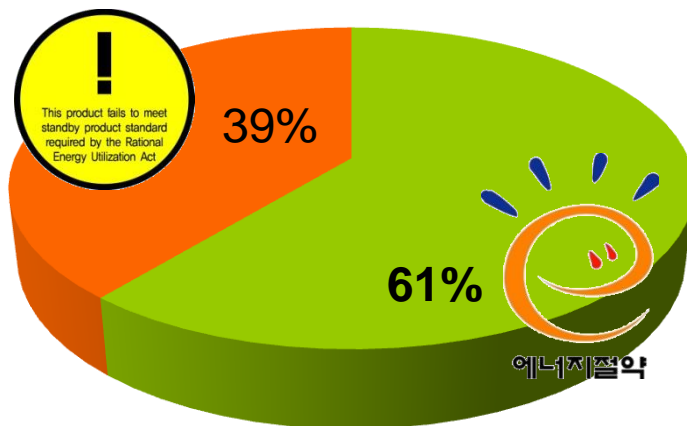# 3. Expansion of Warning Label Scheme

◆ **Innovative and critical policy change**

- The first country with mandatory Warning Label scheme for reduction of standby power adding new initiatives
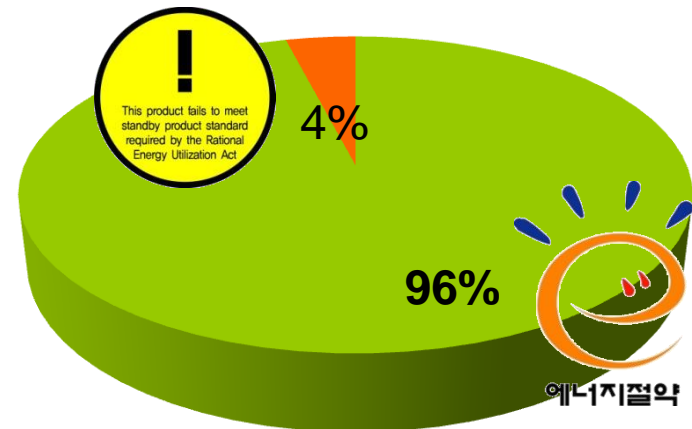
◆ **Enlarged market share of Energy Saving Products**

- For 7 target products of Standby Power Warning Label, the proportion of Energy Saving Products has increased.

<Before implementation>

<After implementation>

This product fails to meet standby product standard required by the Rational Energy Utilization Act

39%

61%

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This product fails to meet standby product standard required by the Rational Energy Utilization Act

4%

96%

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3. Expansion of Warning Label Scheme

◆ **12 more target products** (from July 1. 2010)

- To maximize energy savings of 12 more items through promotion of market share of Energy Saving Products
  - Estimated energy savings : 283GWh/year
  - Market share of Energy Saving Products will go up from 7% to 90% after implementation of Warning Label Scheme.

- To apply mandatory standby power policy to all the target products of e-Standby Program (voluntary -> mandatory)
  - Target products (12 more products)

Categories	Target products
Office equipments	Fax Machines, Copiers, Scanners
Consumer electronics	VCRs, Audios, DVD Players, Radios, Door Phones, Cord / Cordless Phones, Electronic Toilet Seats, Modems, Home Gate Ways

Thank You !

For more information,

E-mail : khlee@kemco.or.kr

KEMCO homepage : http://www.kemco.or.kr/eng/