# Korea's Energy Labels & Standards

# Transforming Innovation into Realistic Market Implementation Programs

**April 27, 2010** 

Lee Ki-Hyun

khlee@kemco.or.kr

82-10-8228-1448

#### **Contents**

**Energy Labels & Standards** 

Intervention & accomplishments

**Major developments** 

#### **Energy Labels & Standards**

- 1. Energy Labels & Standards Programs
  - A. Energy Efficiency Labels and Standards Program
  - B. High-Efficiency Equipment Certification Program
  - 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

High-efficiency Equipment Certification Program

Energy
Labels &
Standards

e-Standby Program



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



- 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 1<sup>st</sup> grade to the 5<sup>th</sup> grade
  - Application of MEPS below the 5<sup>th</sup> 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

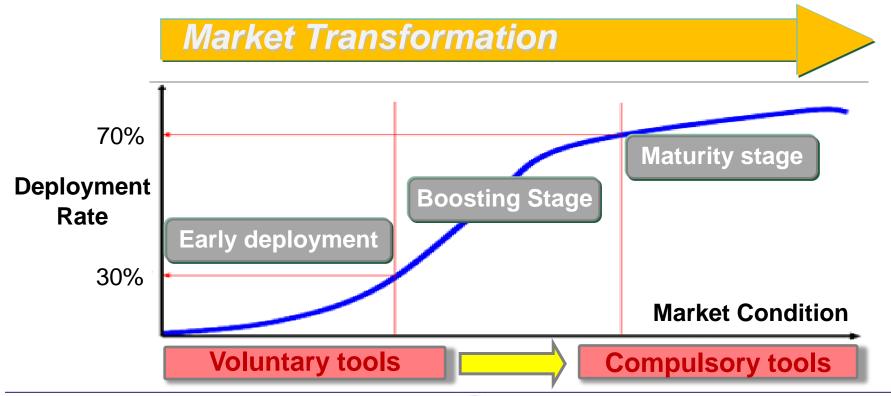
#### Intervention & accomplishments

- 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.





# 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

- High efficiency Certification
- Pilot deployment service

#### **Boosting stage**

- Rebate program
- Funding
- Tax deduction
- Procurement

Voluntary tools for Phasing-in

#### Maturity stage

- MEPS
- Transition to mandatory tools
- Mandatory use

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.

Appliance Certification		e-Standby
Procurement		Procurement
Mandatory Use*		Mandatory Use*
Mandatory Use**		
Funding		
Rebate		
Tax deduction		*: in public buildings
Test support		** : in apartment buildings
	Mandatory Use*  Mandatory Use**  Funding  Rebate  Tax deduction	Mandatory Use*  Mandatory Use**  Funding  Rebate  Tax deduction

# 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

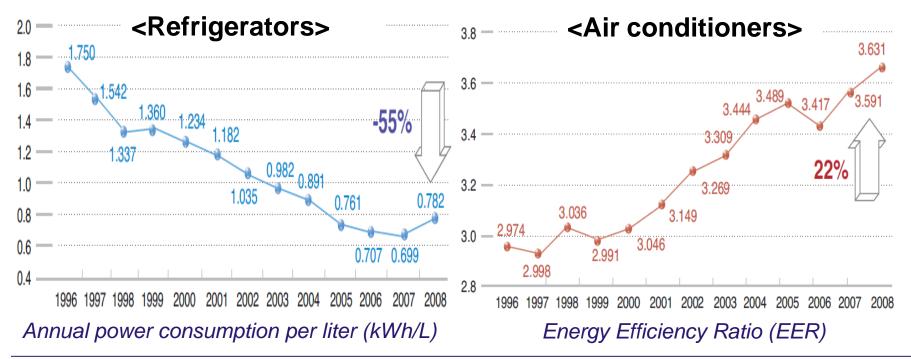
#### Monitoring program

- 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

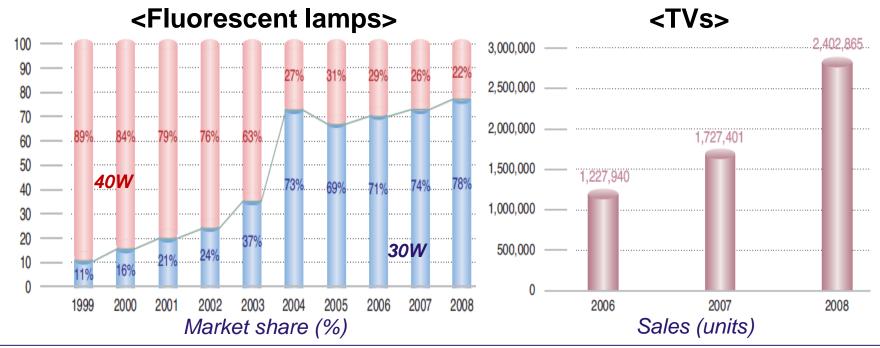
- white goods such as refrigerators and air conditioners are good example of successful intervention.
  - Refrigerators' energy consumption has decreased by 55%.
  - Air conditioners' energy efficiency has increased by 22%.



# 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



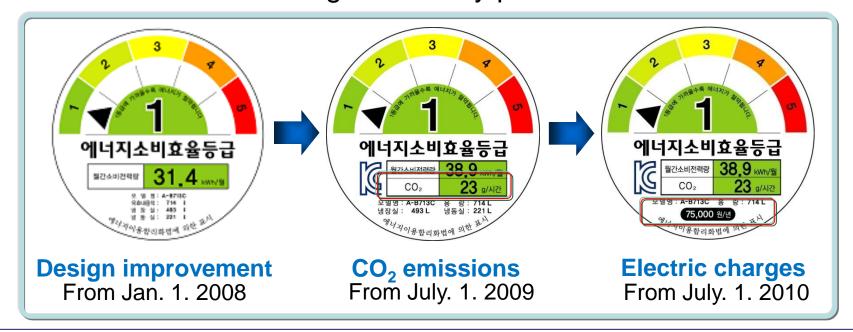
#### **Major developments**

- 1. Additional information on labels
- 2. Indication of electric charges
- 3. Expansion of Warning Label Scheme

#### 1. Additional information on labels

#### **♦** CO<sub>2</sub> 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



### A. Indication of CO<sub>2</sub> emissions

- ◆ CO<sub>2</sub> 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<sub>2</sub> emissions (1Wh = 0.425g of CO<sub>2</sub>)
    - Average GHG emission factor during these five years

#### ♦ World's first CO₂ label for electrical goods

- Korea became the first country to implement CO<sub>2</sub> 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<sub>2</sub> emissions

#### Effectiveness of policy tools

- Energy using products emit 75~95% of CO<sub>2</sub> at their operational stage and other stages are less relatively.
  - Automobiles: 81.3%, Air Con.: 95.4%, Laundry: 75.1%
- This CO<sub>2</sub> labels indicate the emission at the operational stage only for best effectiveness with the minimal expense.



#### 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

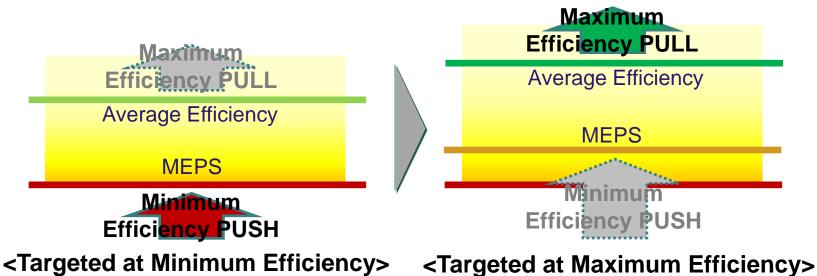
#### New policy tool for efficiency pull

- 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



**Korea Energy Management Corporation** 

# 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 1<sup>st</sup> 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



#### **Mandatory**

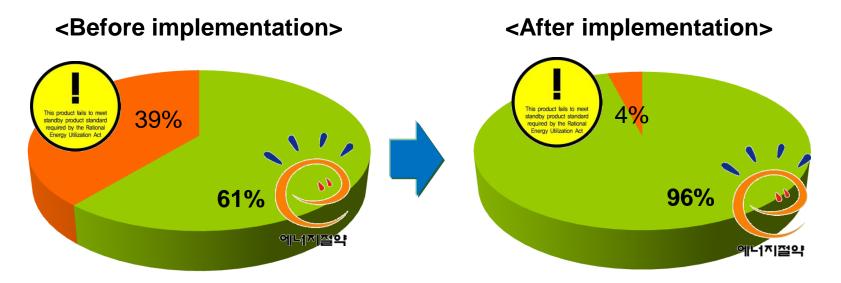
For products that don't meet standby power standard

◆ 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)

# 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.



# 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: <a href="http://www.kemco.or.kr/eng/">http://www.kemco.or.kr/eng/</a>

