Energy Efficiency Policies in Korea

Korea Energy Management Corporation

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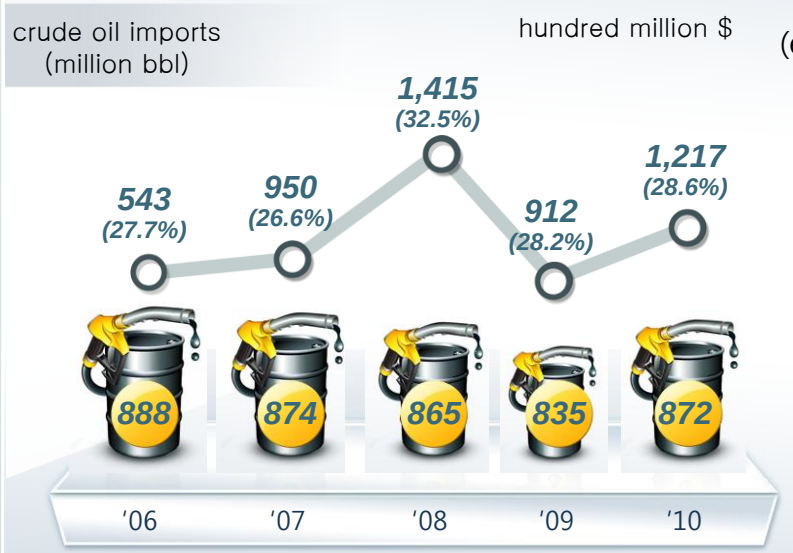
Energy Consumption Status

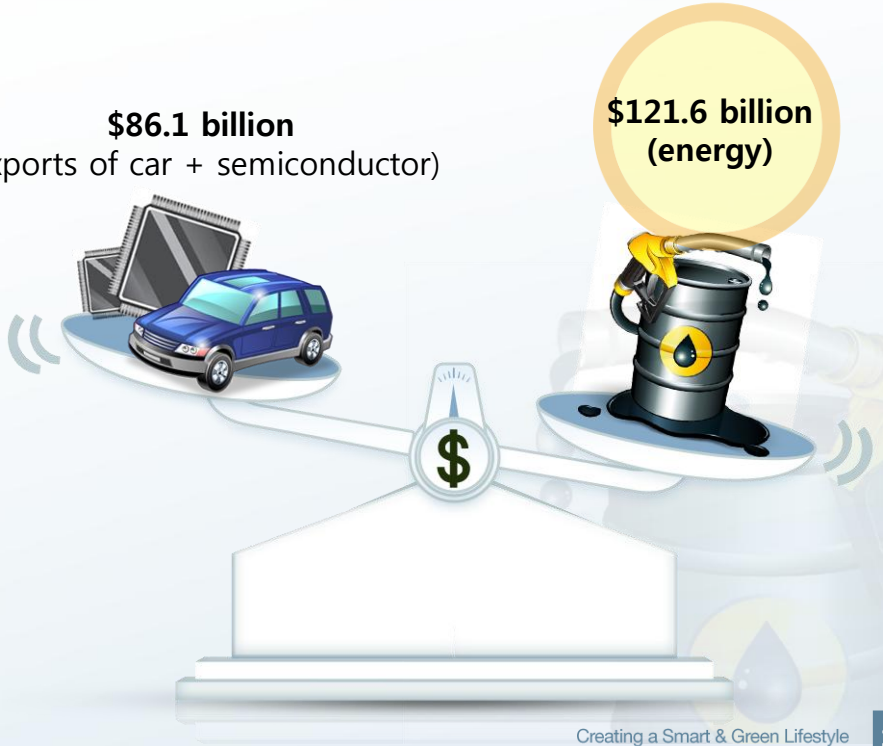
1-1 Energy Consumption Status (1)

High dependence on external sources of energy (96.4%)

- **Very limited supplies of indigenous natural resources**
- **Substantial increase in energy demand due to high economic growth**
  (world's 10th largest energy & oil consuming country)
- **Cost of energy imports is $121.7 billion in 2010 (28.6% of total imports)**
  (crude oil $68.6 billion, LNG $17 billion, coal $13.1 billion)

Energy imports (based on total imports)

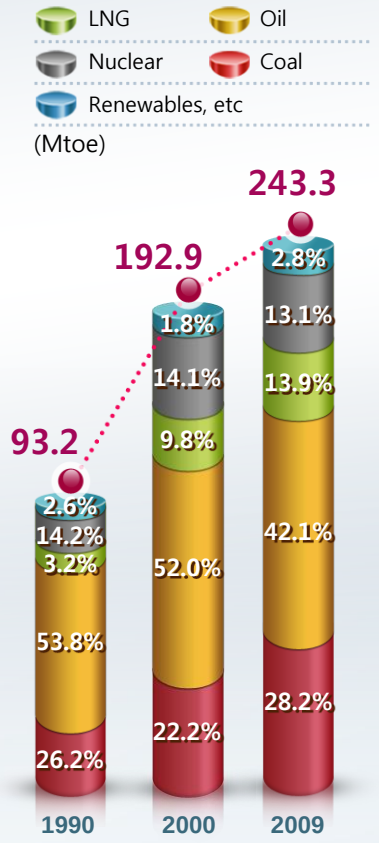


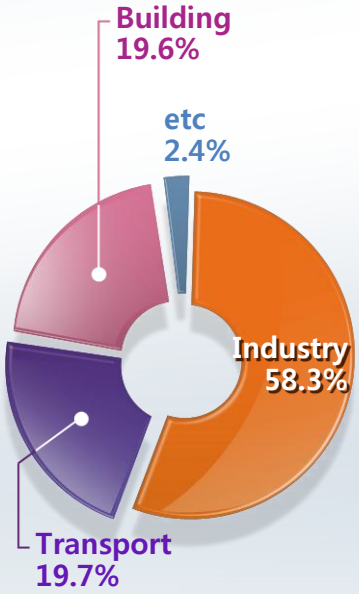


1-2 Energy consumption status (2)

Status of energy consumption & CO_2 emissions by sector

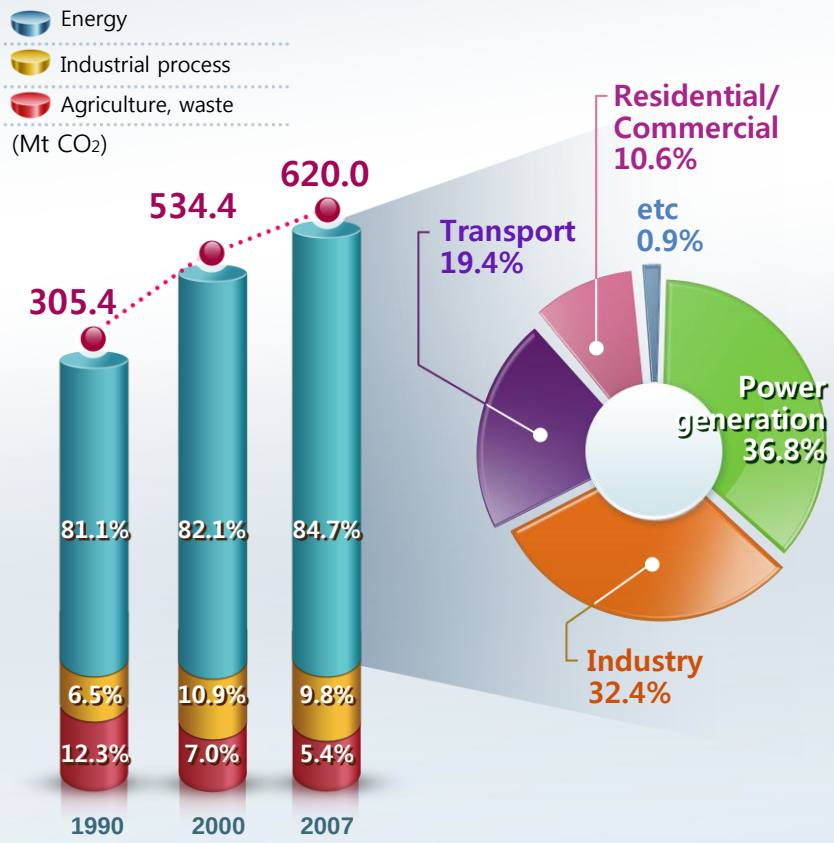
Primary & final energy consumption





Energy consumption by sector

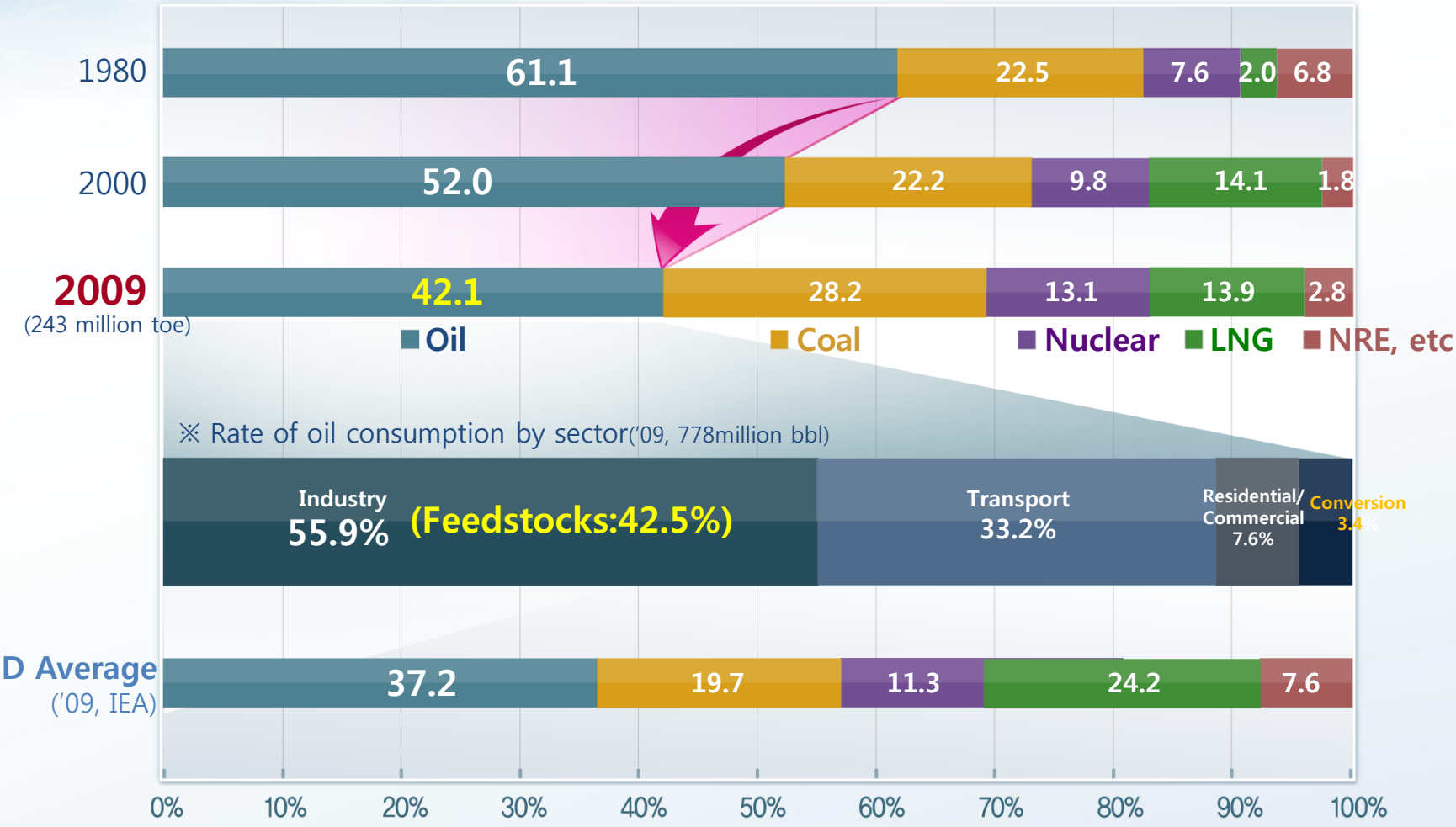
CO_2 emissions



1-3 Energy Consumption Status (3)

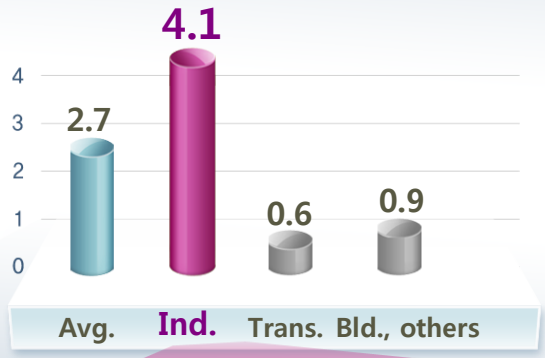
Continuous decrease of oil dependency by diversifying sources since 1980s

▶ Rate of fossil fuels : 85.6%('80) → 88.3%('00) → 74.2%('09) → 60.7%('30)



[Ref.] Energy consumption in industrial sector

Final energy growth rate by sector ('05~'10)



Status of energy intensive users

Type of Industry		Number	Rate of increase	consumption (mil. toe)	Rate of increase
Petro. Chemical	2000	282	42.5%	16.1	13.7%
	2009	402		18.3	
Iron & Steel	2000	436	65.8%	18.3	31.7%
	2009	723		24.1	

Expansion of blast & electric furnace *(Hyundai-steel, '10)*

Expansion of electric furnace & HR *(Dongbu-steel, '09)*

Expansion of steel plate Factory *(POSCO & Dongkuk-steel, '10)*

Substantial increase of energy consumption by expanding investment in industrial sector

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Ⅱ

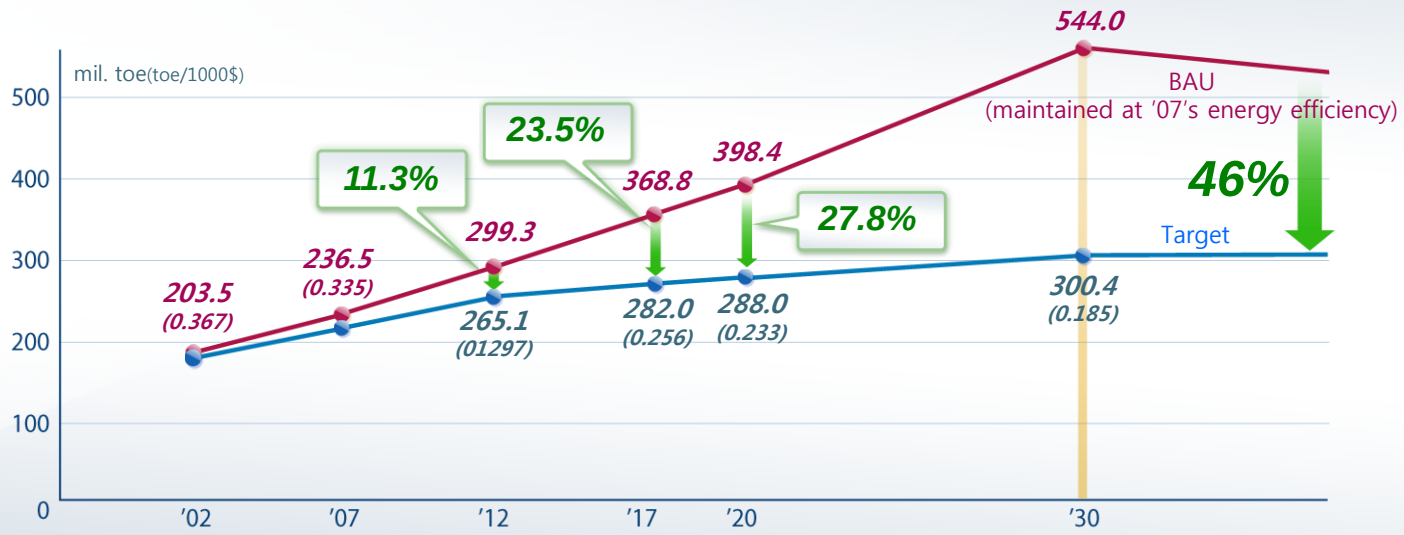
Overview of Energy Efficiency Policies

2-1 Long-term goal of energy policies

Improve the national energy efficiency by 46% until 2030

▶Improve energy-intensity to 0.185(toe/1,000$) through National Energy Master Plan('08~'30)

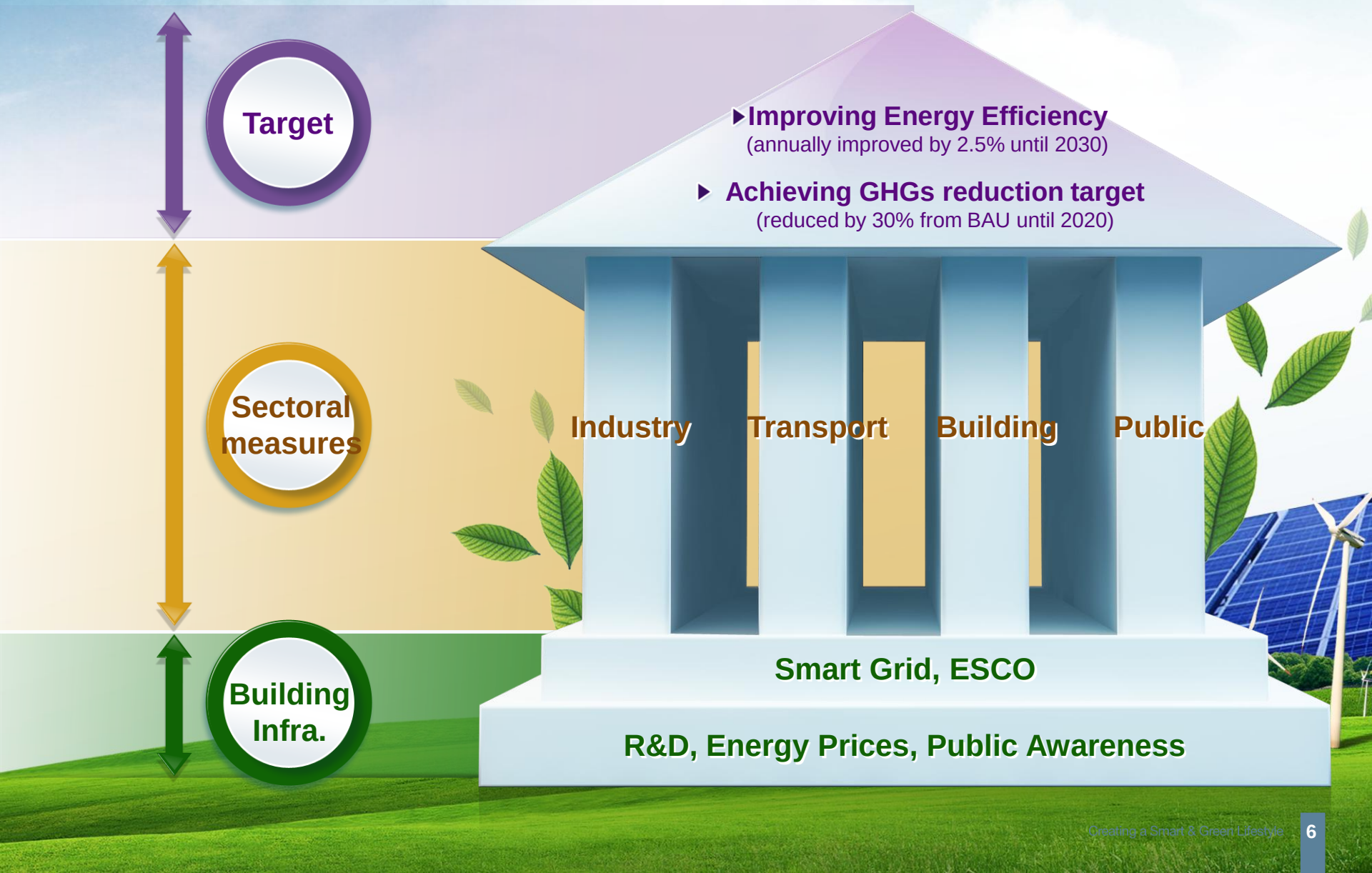
Energy demand and target(~'30)



Relatively low potential of energy saving due to energy-intensive industrial structure

A call for stronger policy measures for transition into low-energy & carbon economy

2-2 Implementation System of Policies



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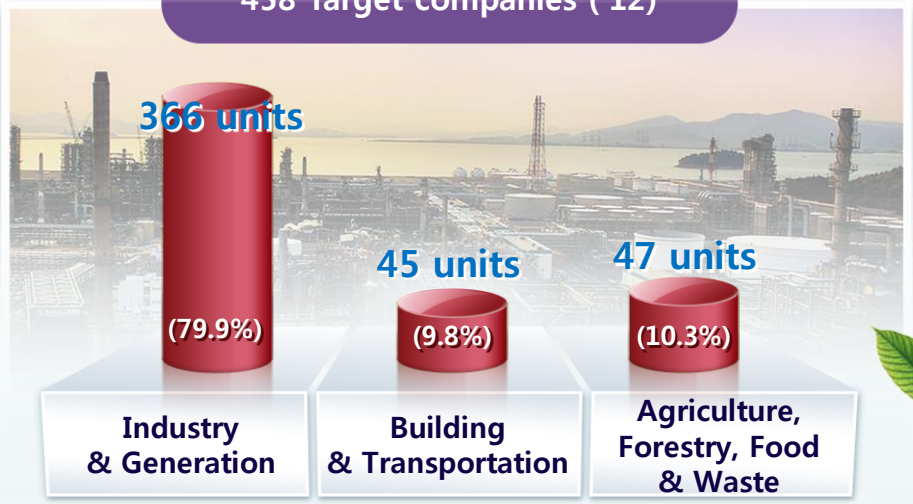
Main Policy Measures in Each Sector

GHG-Energy Reduction Target Management

Taget management(Cap and No-Trade Scheme) for energy-intensive companies

total emission 620million ton('07)

458 Target companies ('12)



Management of 58.2% of Korea's GHG emissions

(64.9% of total energy consumption in industrial sector)

Target Companies

▶ **Gradually expand the scope of target companies**

* **(~'11) 25,000** tCO_2(100TJ) → **('12~)** 20,000 tCO_2(90TJ) → **('14~)** 15,000 tCO_2(80TJ)

3-2 Industrial Sector (2)

Introduction of Green Credit between large and small companies

Green Credit

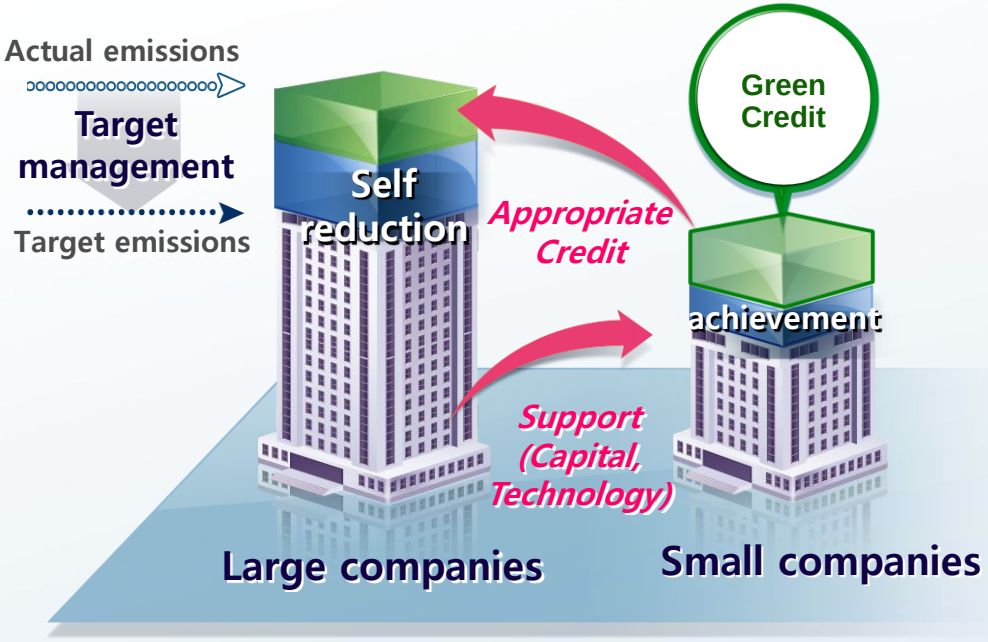
Win-Win cooperation between large and small companies
⇒ SMEs are provided with technology and capital by large companies and large companies can have some portion of GHG reductions of SMEs

Potential for reduction

Large companies < **Small companies**

Technology & capital

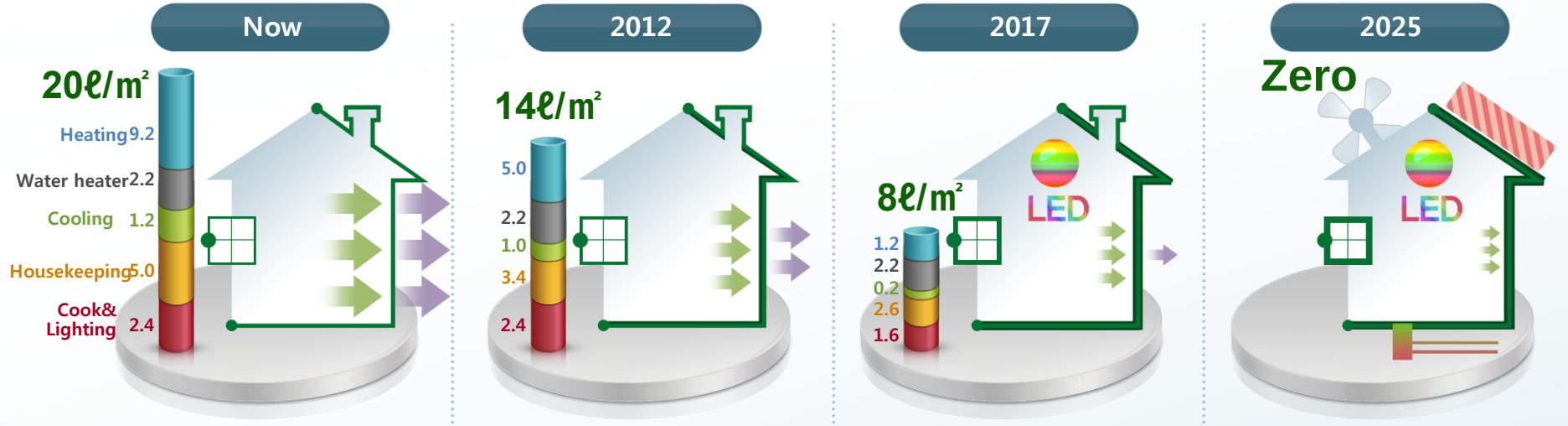
Large companies > Small companies



3-3 Building Sector (1)

Reinforce codes for new buildings : Zero-energy building by 2025

- Strengthen the heat-insulation standard for windows and walls
  * 15% reduction('12) → 30% reduction('17) → 60% reduction('20) → obligatory zero energy('25)
- Implement the regulations to reduce total energy consumption of office building
  * implementation for office building over 10,000㎡ from 2011

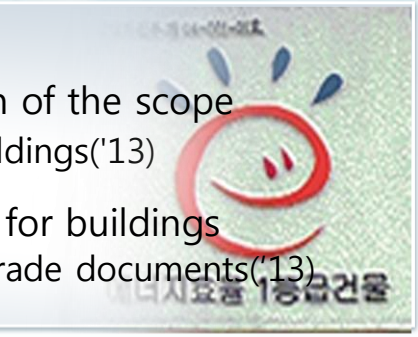


Energy intensive house	Low energy house (reduce 50% of heat and air conditioning energy)	Passive house (reduce 90% of heat and air conditioning energy)	Zero energy house (no energy consumption in the house)
70mm heat-insulation, Double window, High efficiency boiler	150mm heat-insulation, Triple window, Heat-exchanging ventilation	250mm heat-insulation, High efficiency window, LED lighting	250mm heat-insulation, Vacuum insulation, LED lighting, NRE

3-4 Building Sector (2)

Energy Efficiency Labeling

- Fostering voluntary certification and phased expansion of the scope
  * New buildings('10~) ➔ Existing buildings('12) ➔ All buildings('13)
- Smooth transition to mandatory registration program for buildings
  * Compulsory attachment of the Certificate to lease and trade documents('13)

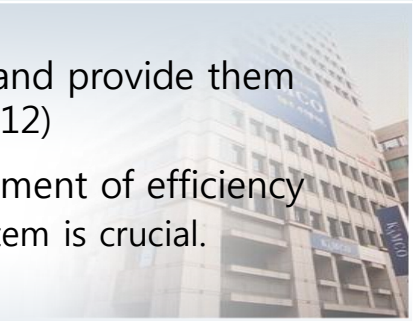


Target Management (Cap and No-Trade)

- Taget management(Cap and No-Trade Scheme) for energy-intensive buildings
  * The same operation process with target management in industrial sector
- After pilot project('11), full implementation will be started for 34 buildings('12)
  * The scope will be expanded gradually from 2012

Energy Efficiency Resource Standards (EERS)

- Impose the energy-saving target on energy suppliers and provide them with various incentives according to the performance('12)
- Promote the energy suppliers' investment for enhancement of efficiency
  * Development of reliable monitoring and verification system is crucial.

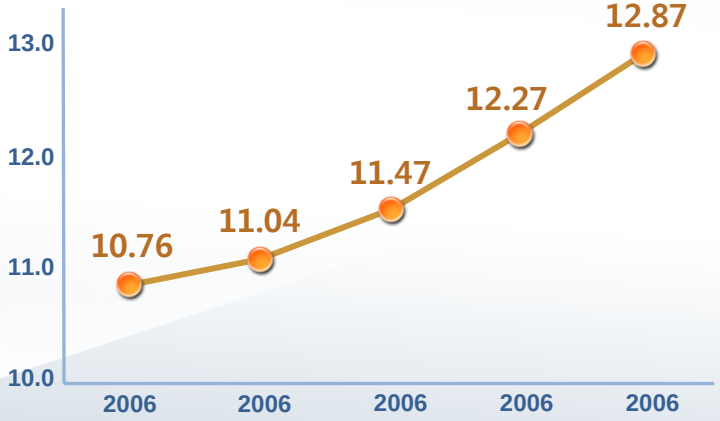


3-5 Transport Sector (1)

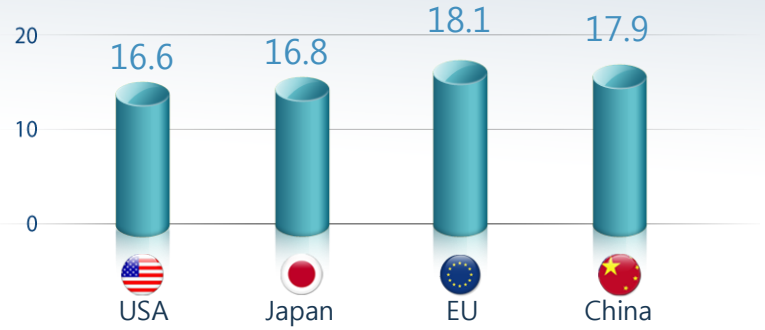
Reinforcement of average fuel economy program

Status

- Fuel economy has increased by 4.6% annually after introduction in 2006.
- However domestic fuel economy standards are lower than developed countries'.



Policy Direction



<Fuel economy standard : km/ℓ>

- Reinforce fuel economy standard to 17km/l by 2015
  ('12)30% → ('13)60% → ('14)80% → ('15)100%
- Impose strengthened sanctions, such as fine and penalty, for the violator

Global reinforcement of fuel economy and GHGs emission standards

USA	11.7km/ℓ in 2010	16.6km/ℓ from 2016	JPN	6.4~21.2km/ℓ in 2010	7.4~22.5km/ℓ from 2015
CHI	15.2km/ℓ in 2010	17.9km/ℓ from 2015			

3-6 Transport Sector (2)

Labeling & fuel economy

- Improvement of fuel economy measurement method to reflect practical fuel economy that drivers actually feel and estimate
- Development of test methods for PHEV and labeling scheme for EV
  * PHEV: Plug in Hybrid Electric Vehicle, EV: Electric Vehicle

Tire efficiency labeling

- Introduction of tire labeling (5 grade) for promoting the high-efficiency tires
  * Preliminary certification ('11) → Enforcement ('12)
- Gradual expansion to scope of the labeling program
  * Passenger car('11) → light truck('13) → truck & bus('14)

Promotion of green car

- Promotion of green car according to deployment roadmap and strategy('10)
  * Product 1.2 million Green Cars in Korea and export 0.9 million Green Cars('15)
  * Increase the internal market share of Green Cars to 21%('15)

Fuel Economy for heavy-duty vehicles

- Expansion of the scope of average fuel economy program to include heavy-duty vehicles such as trucks and buses('15)
  * Implementation plan : Japan('06), US('11), EU('15)

3-7 Equipment & Appliance (1)

Implementation status of 3 energy labels and standards programs

Energy Efficiency Label & Standard Program ('92~)

- Comparative grade and MEPS
- 27 items including refrigerators etc

High Efficiency Equipment Certification Program ('96~)

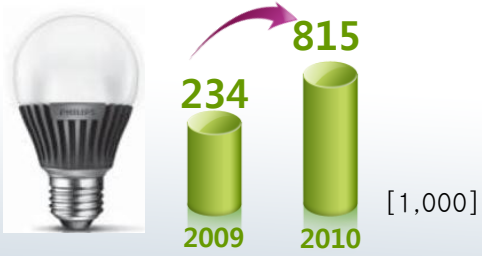
- Endorsement (Certification)
- 37 items including LEDs etc

e-Standby Program ('99~) (including Warning label)

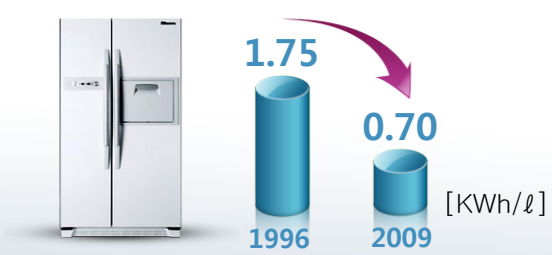
- Endorsement (Positive/negative)
- 22 items including Set-top boxes etc

Main achievement of the labels and standards programs

Certified LED Lamps
: Market share has increased by **248%** in a year.



Refrigerators
: Power consumption has reduced by **60%** after 1996.



3-Phase induction motors
: **MEPS** have driven Low-efficient ones out of the market.

MEPS : Minimum Energy performance Standards

Market Entry
Certification to support new efficient products' promotion

Market Expansion
Energy efficiency labeling for phasing-in of efficient products

Market Transformation
Application of efficiency limits to all products for efficiency shift

3-8 Equipment & Appliance (2)

Introduction of 'ENERGY-FRONTIER' for Appliance

ENERGY - FRONTIER

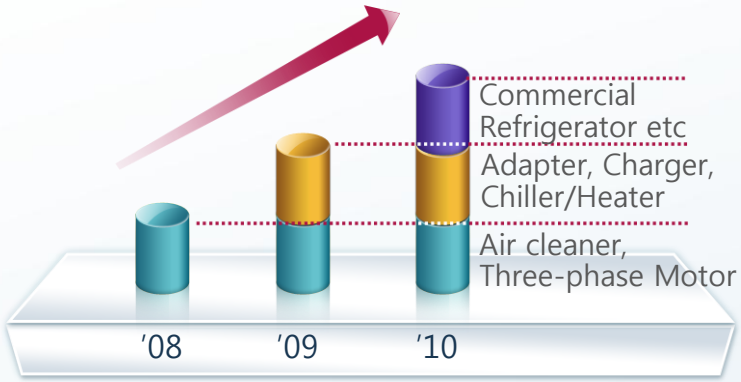
Set up the target efficiency beyond existing grade standards
(30~50% higher than the 1st grade)

Items : TVs, Refrigerators, Air-Conditioners, Washing machines

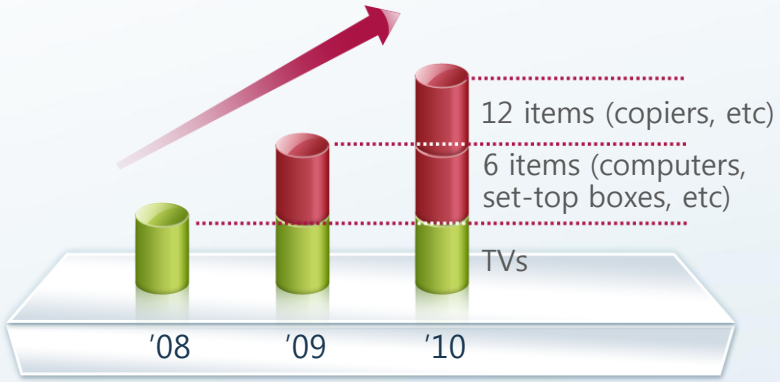
Support, R&D

Positive labeling and incentives for companies that achieve the target efficiency

Expansion of target items



MEPS : Compulsory energy efficiency limits



Standby Power Warning Label : Standby Power limits

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Green Energy Family

Energy[-], Love[+]

Energy conservation and social service

Optimal heating in wintertime

Optimal indoor heating and lifestyle

Tire-Up, Energy-Down

Proper tire pressure and Eco-driving culture

Goodbye! Standby Power

Reduction of standby power of electronics

Green Sports / Green Market

Various consumer friendly campaign

SESE NARA

Save Energy Save Earth

- **Practical Early Education Program for energy conservation**
  - * Elementary school : 152 groups,
  - * Middle school : 76 groups,
  - * High school : 72 groups
  - * Others : 389 groups

[Ref.] KEMCO's Major Activities

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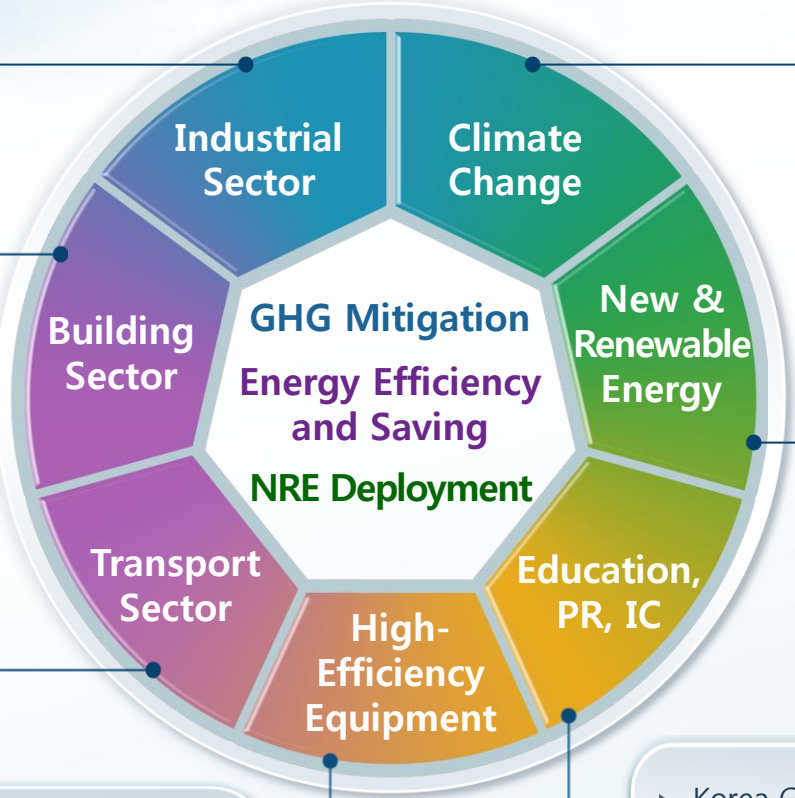
- Target management(Cap and No-Trade)
- Green Credit Program
- Financial support for Energy Saving
- Energy Management Systems

- Building Certification Program
- Building Codes
- Target management(Cap and No-Trade)
- Energy saving in public building

- Average Fuel Economy Program
- Fuel Efficiency Labeling
- Tire Efficiency Labeling
- Deployment of Green Car

- Energy Efficiency Label & Standard Program
- High-Efficiency equipment Certification Program
- E-Standby Program
- Energy Welfare Program



- Creation of the Carbon Market
- GHG DB Management
- Registration and Certification of GHG Reductions
- Certification of CDM projects

- 1mil. Green Homes Project
- Subsidy for Deployment of NRE
- Deployment in public sector
- Financial Support for NRE
- Renewable Portfolio Standard
- Certification of NRE equipment
- Regional NRE Development

- Korea Green Energy Show
- Green Energy Exhibition Center
- Early Education
- Training for technical engineer
- Multi and bilateral international cooperation

"Save energy, Save earth"

Thank you

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