Energy Sector Competition

& Tariff Policy

May 22, 2014

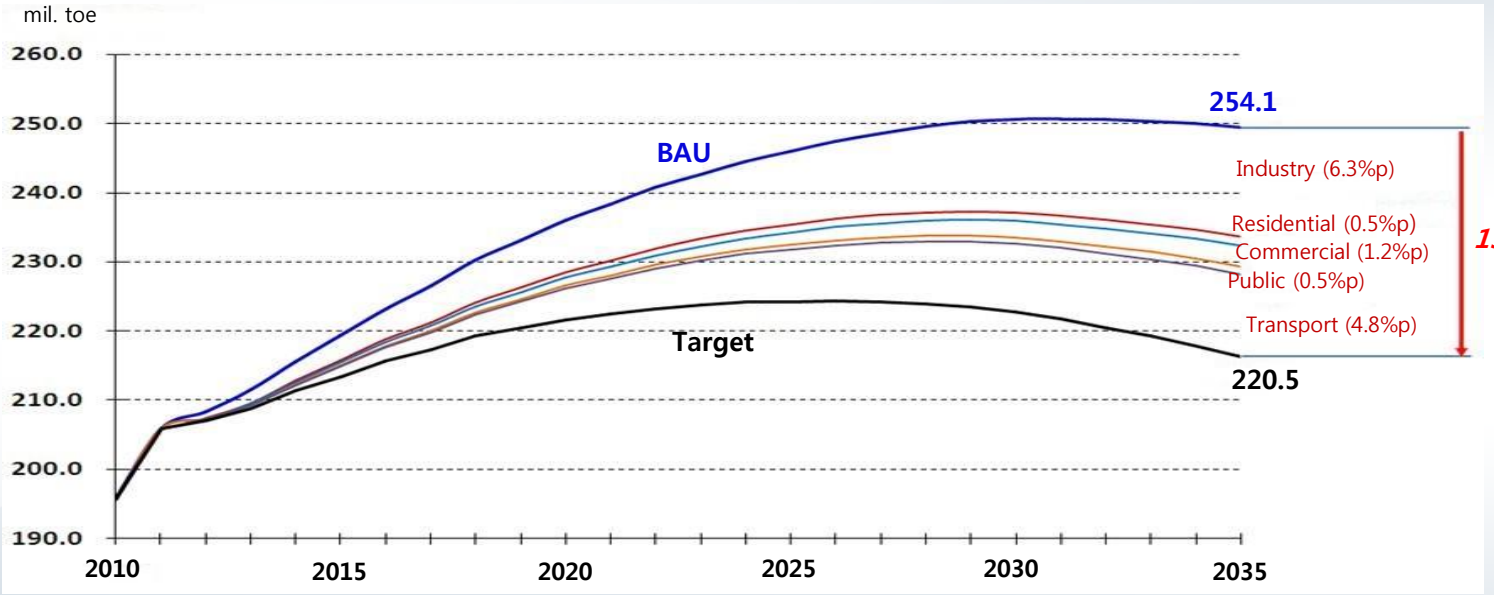
KOREA ENERGY MANAGEMENT CORPORATION

Energy Efficiency Policies

1. Long-term Target of Energy Efficiency

Reduce the total final energy consumption by 13% by 2035

Energy demand and target(~'35)

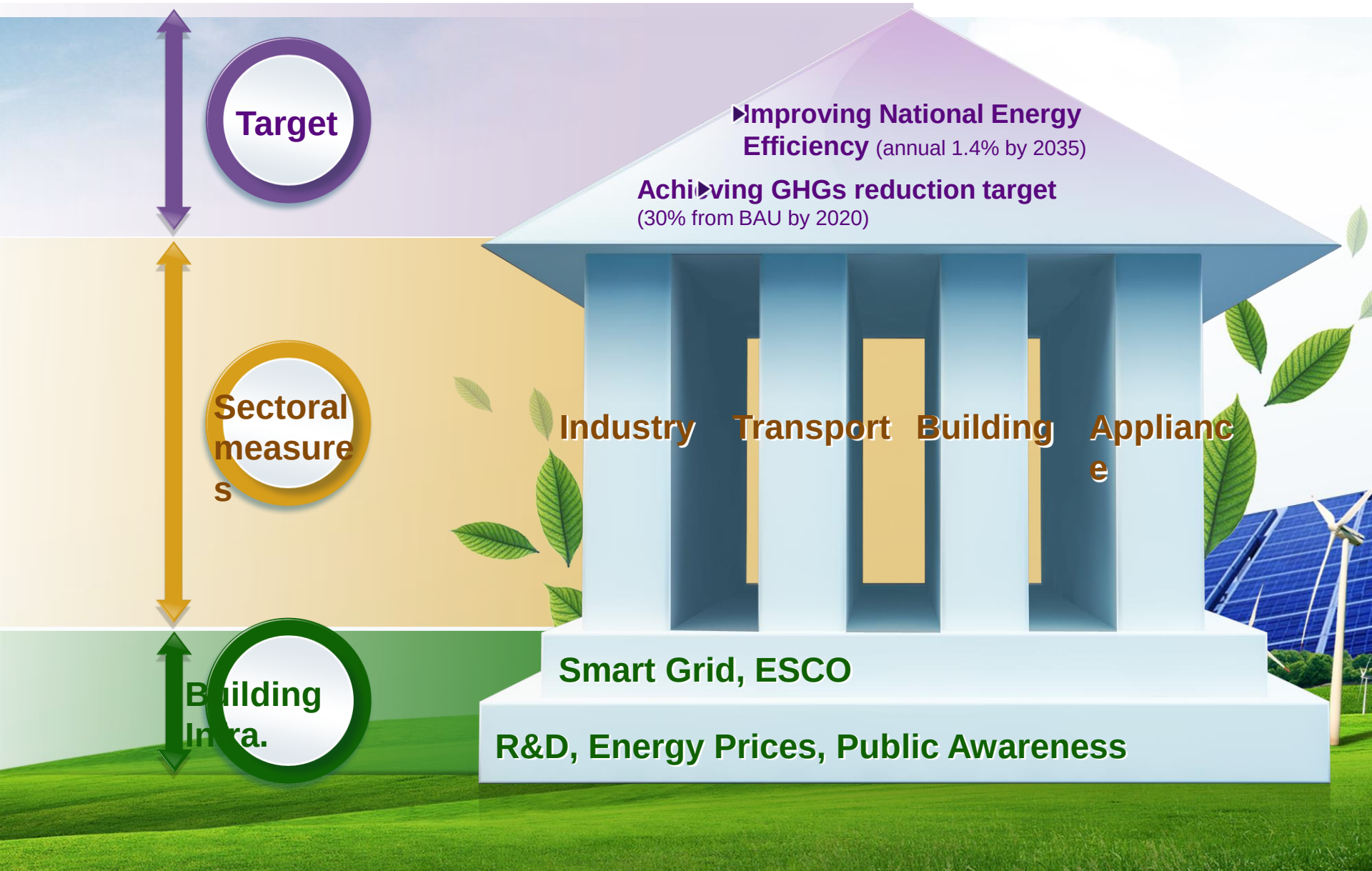


▶ Improve energy-intensity to 30% of 2011 level through national energy master plan(~'35)

Korea has low potential of energy saving due to energy-intensive industrial structure

Need stronger measures for transition into low-energy economy

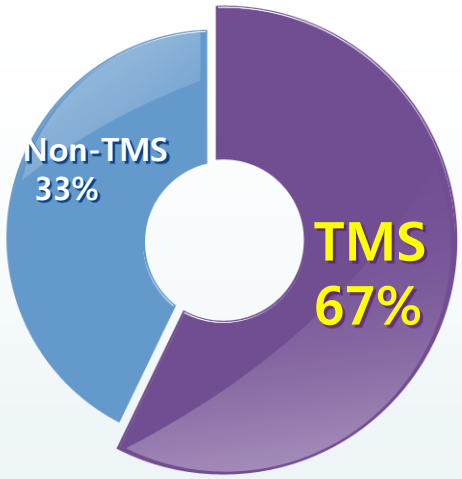
Energy Efficiency Policy Implementation



Target Management Scheme for GHG & Energy Reduction

Target : Energy-Intensive Companies

Total emission 608million ton



480 Target companies ('13)

Managing 67% of GHG emissions & 65% of energy consumption in Korea

Target companies

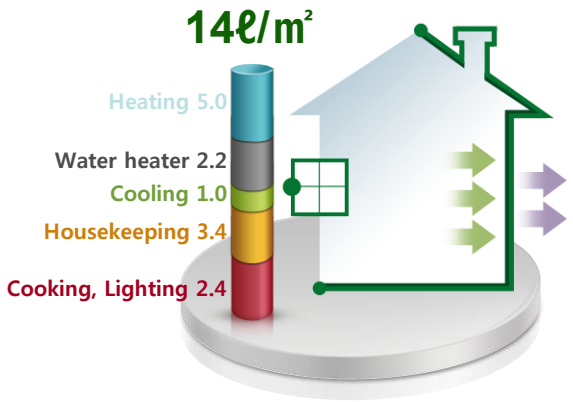
- 2012 : over 25,000 tCO2 or 100TJ
- 2014 : over 15,000 tCO2 or 80TJ

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

- Reinforce the heat-insulation standard for windows and walls
  reduce 30% ('17) → reduce 60% ('20) → obligatory zero energy ('25)
- Implement the regulations for total energy consumption of office building

* implementation for all buildings from 2013.09

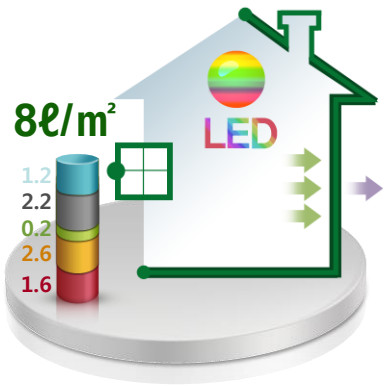
2012



Low energy house
(reduce 50% a heat and air conditioning energy)

150mm heat-insulation, triple window, a heat-exchanging ventilation

2017



Passive house
(reduce 90% a heat and air conditioning energy)

250mm heat-insulation, high efficiency window, LED lighting

2025

Zero energy house
(no energy consumption in house)

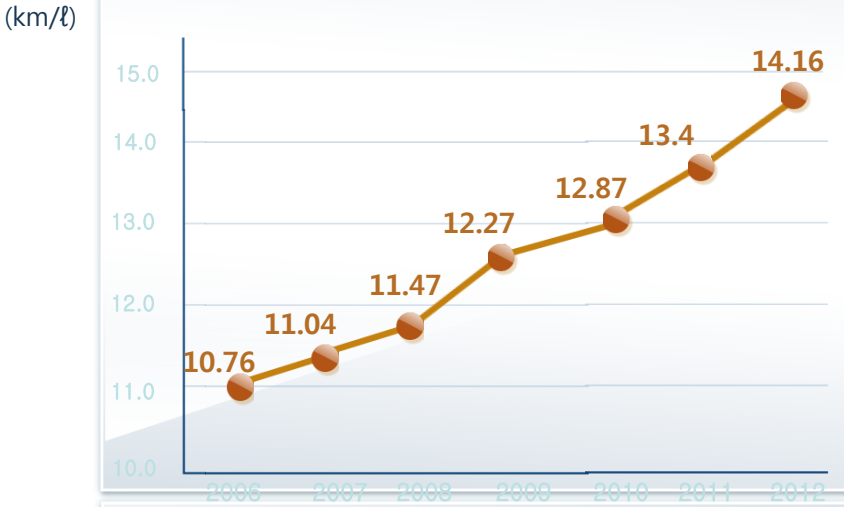
250mm heat-insulation, a vacuum insulation, LED lighting, NRE

Transport Sector

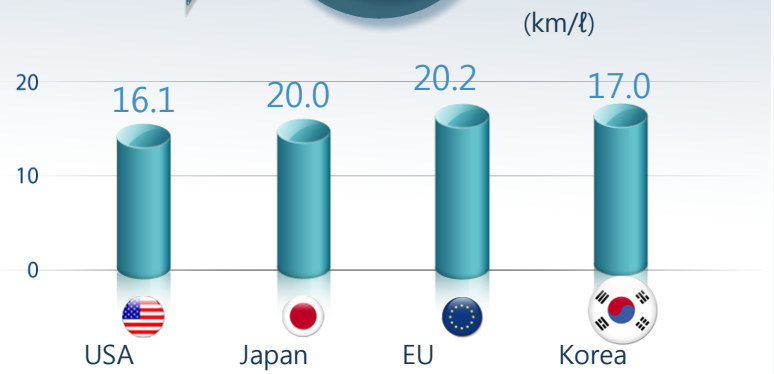
Reinforcement of average fuel economy

Status

- For passenger cars, fuel economy has been increased by 19.6% since 2006 due to corporate average fuel economy (CAFE) standards



Direction



- Increase in CAFE standards for passenger cars to 17km/L by 2015
- Compliance flexibility to manufacturers such as credit banking and trading, incentives for EV, etc

reinforce the fuel economy in US, Japan and restrict the GHGs emission in EU

USA	13.9km/ℓ in 2010	16.1km/ℓ from 2016
JPN	19.2km/ℓ in 2009	20.0km/ℓ from2015
CHI	14.0km/ℓ in 2009	15.7km/ℓ from2015

Equipment & Appliance Sector

Implementation status of 3 energy efficiency management program

Energy efficiency labeling program

- Implementation('92)
- 35 items including refrigerator etc

High efficiency certification program

- Implementation('96)
- 45 items including LED etc

e-standby program

- Implementation('99)
- 22 items including Set-top box etc

SEAD Global Award Winner('12~'13, TV & Monitor)

LG & SAMSUNG won the award for the second consecutive year

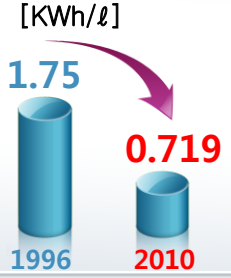
Main performances of energy efficiency labeling program

Best efficiency of TV

44~33% compare with others

Reduce power consumption

60% per year



Television

Electromotor

Certification of high efficiency equipment (support market entry)

→ energy efficiency labeling program (support the market consolidation)

→ lowest energy efficiency standard (throw out the low-energy efficiency appliances)

Funding Information & ESCO Program

Background

- After the oil shock in the 80s, the government took energy saving measures and had problems with promoting energy-efficient facility investment

※ Rational Energy Utilization Act was passed in the 80s for energy conservation in industrial /residential /building sector

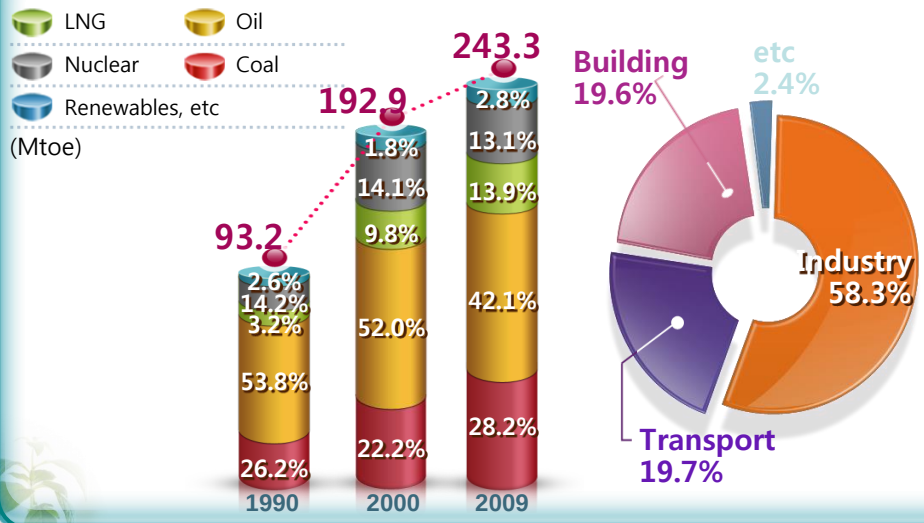
- 80s, government offered 200 billion wons of long-term loans with low interest rates for energy-efficient facility investment
- In the 90s, fresh means of financial support was required due to technical and financial incapacity of investors
- In 1991, third party financing was suggested as a solution and ESCO program was introduced

※ In 1991, Rational Energy Utilization Act was revised to initiate ESCO program

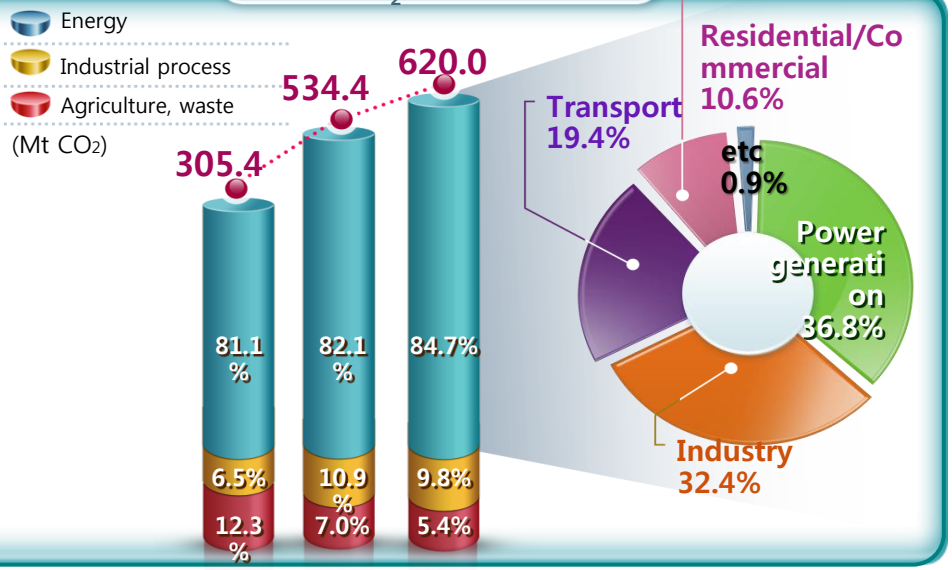
- As Korea imports 97% of its energy from overseas, energy efficiency improvement is of utmost importance

Energy Status of Korea

Primary & Final Energy Consumption



CO_2 Emission



2. Energy Conservation Fund(Government budget)

- **Energy Conservation Fund established in 1980**
  - long term & low rate of interest loan(for 8~10 years, interest : 1.5~3%)
  - Private loan interest : 7~10%
- **Registered ESCO can use Energy conservation fund**
- **Indirect loan system, KEMCO issues recommendation, banks lend money**
  - Banks require security(collateral) and credit

Financial assistance for projects in three categories

- **ESCO projects**
- **Target-managing investment projects**
- **Energy-saving facility projects**

3.What is an Energy Service Company(ESCO)?

CONCEPT

ESCO provides Energy Users with Integrated Energy-Saving Solutions

- It offers project cost and receives the benefits and investment fee in return from the saving cost
- It works to improve energy efficiency, offers maintenance services and technical support, and builds infrastructure
- It proposes integrated efficiency management system during payback period

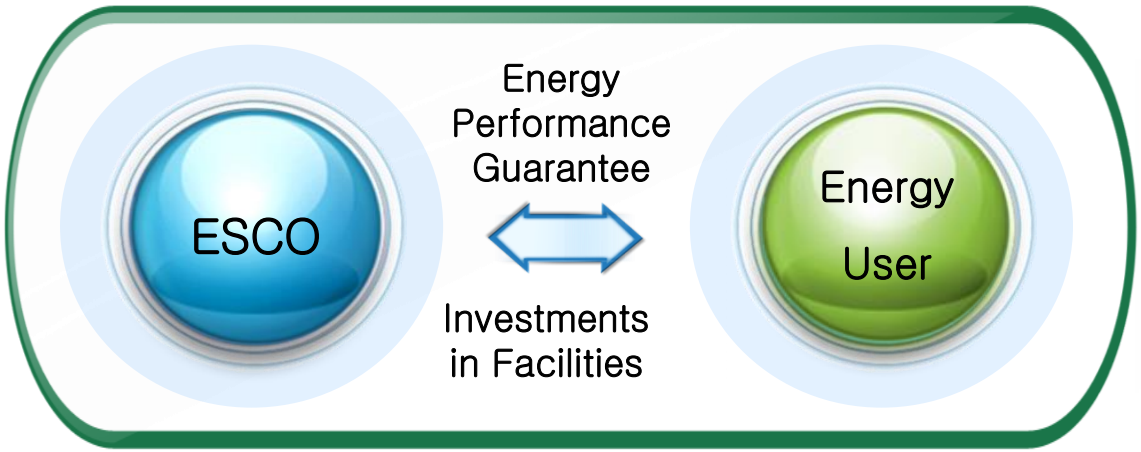
MAIN ROLE

ESCO supplies service in the course of exchanging or supplementing the existing facilities with energy efficient ones

* Field Survey, Audit, Project Proposal, Installation/Construction, Test Run, Maintenance Service

Major Project Areas of ESCOs

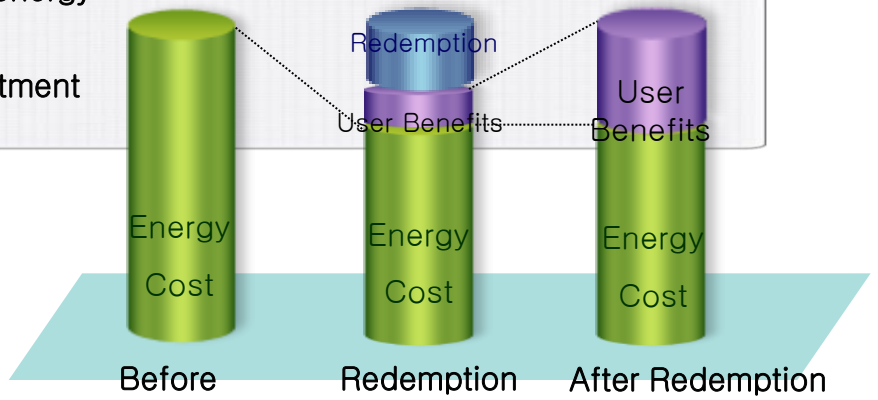
- **Management and Service for Energy Savings in Energy Using Facilities**
- Energy Efficient Facility Investment
- Research and Development on Energy Efficient Facilities and Equipments



4. ESCO Project Method

Contract Method : ESCO Financing and Shared Savings Contract Model

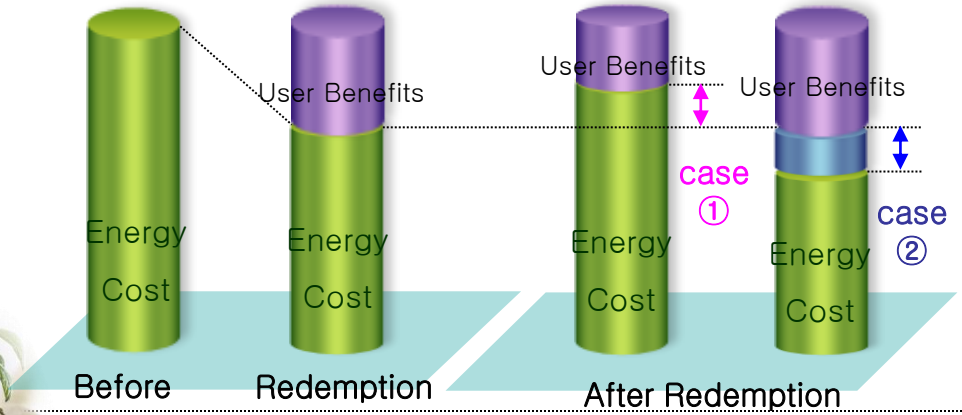
- ESCO makes investments and makes up for the cost from energy savings
- The saved cost resulting from energy efficient facility investment goes to Energy User and ESCO

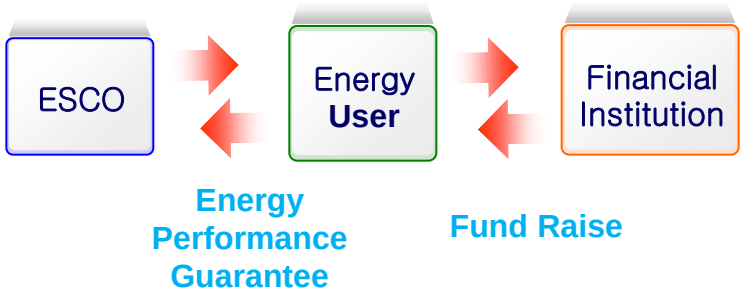


Contract Method : Energy User Financing and Guaranteed Savings Contract Model

- case ① Guaranteed Savings > Actual Savings : ESCO makes up for the difference to Energy User
- case ② Guaranteed Savings< Actual Savings : ESCO and Energy User divide the margin by mutual agreement

※ Guaranteed Savings = Actual Savings : Implementation of post management under the contract and Completion of project





5. Barriers of ESCO Program

ESCO Program Assessment

- Huge Energy Saving Effect compared to Input Cost
- High Reliance on Government Budget and Problems with Engineers and Experts
- Rapid Growth in Energy Conservation Market is prospected due to Change of Energy Environment

Finance

- Lack of Trust and Unprepared Contract Mechanism in regard to new technology
- High Transaction Cost in comparison with Project Size
- Low benefits of energy efficiency projects

For ESCO

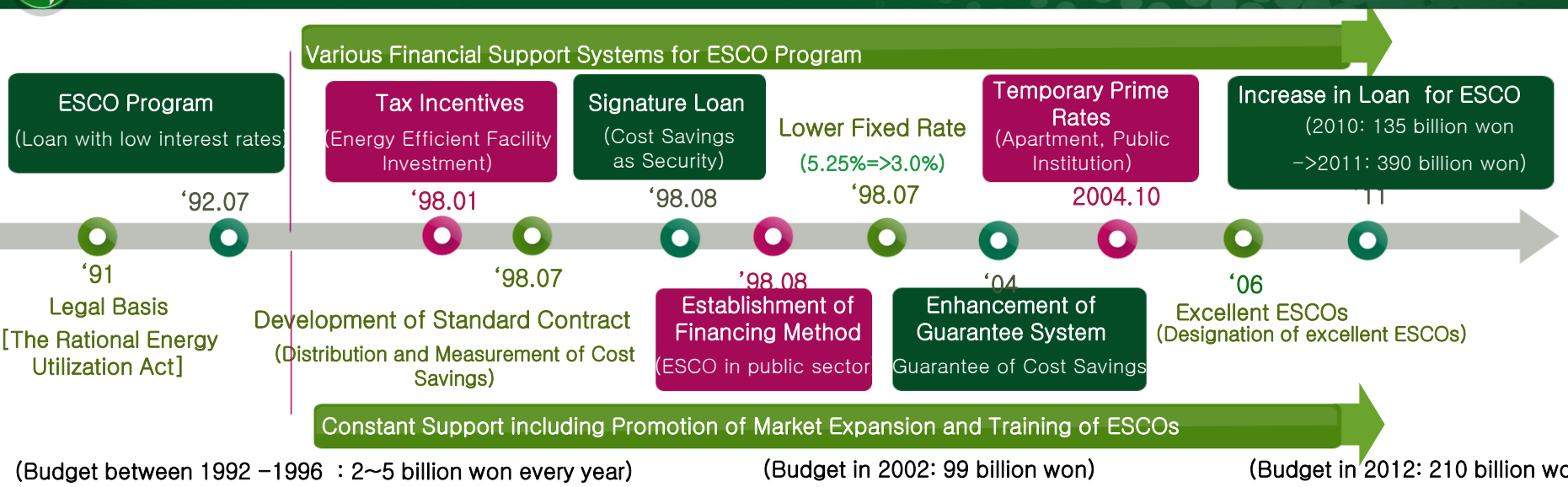
- High Cost of Project Development
- Limited Technology and Business and Incompetency of Risk Management
- Uncertainty of Government Support in Setting Business Plan
- Risk of Delay in Payment by Energy User

Public Side

- Budget Crunch in Energy Efficiency Improvement Project
- Fear of Risk and Lack of Awareness and Technology
- Lack of Awareness in regard to Contract Method of ESCO Program
- Limited Financing in relation to Operation Cost and Capital Stock

6. ESCO Program in Korea

Government Policy by year



Main Elements of ESCO Program

1) System Revision to introduce ESCO Program in Public Sector('98.08)
- **Set the Regulations on National Contract Standard and Accounting for ESCO Program in Public Sector**

2) Promotion for Market Expansion, Training for ESCOs, and Establishment of Guidelines for measuring and validating energy conservation

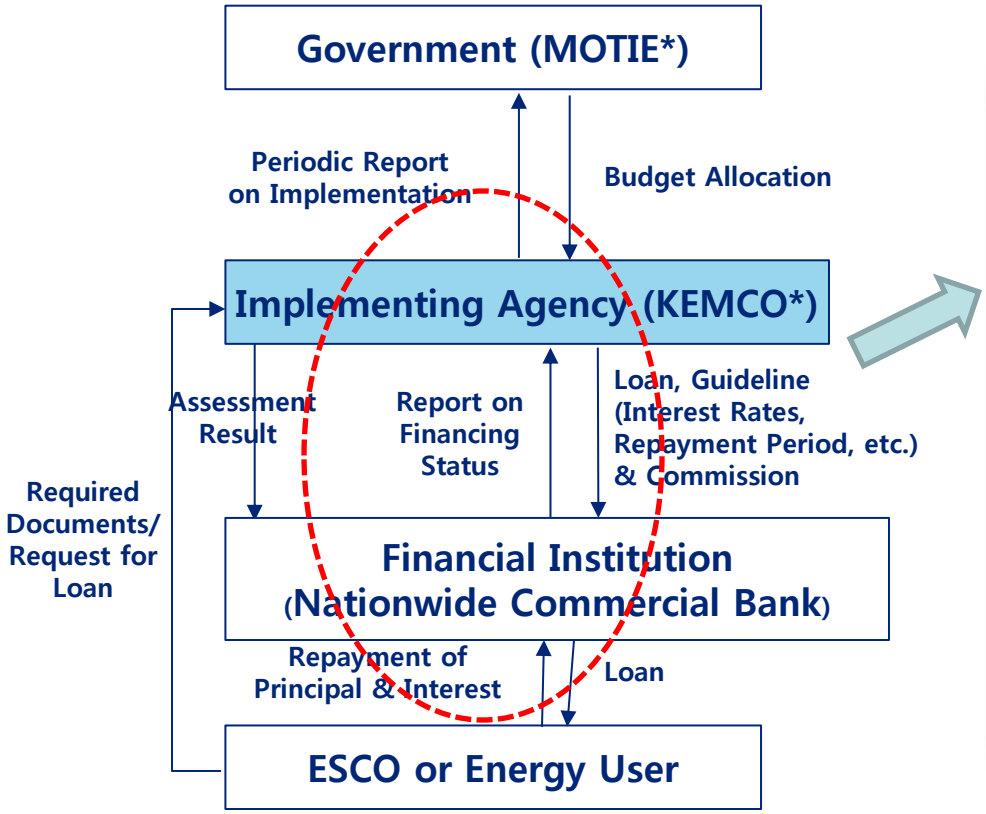
3) Factoring System('99)
- *** The Bank that provided ESCO Fund obtains Account Receivable which ESCOs received from Energy User**

➡ Decrease of Debt Ratio due to the set-off with the existing debt of ESCOs if the Bank factors Account Receivable

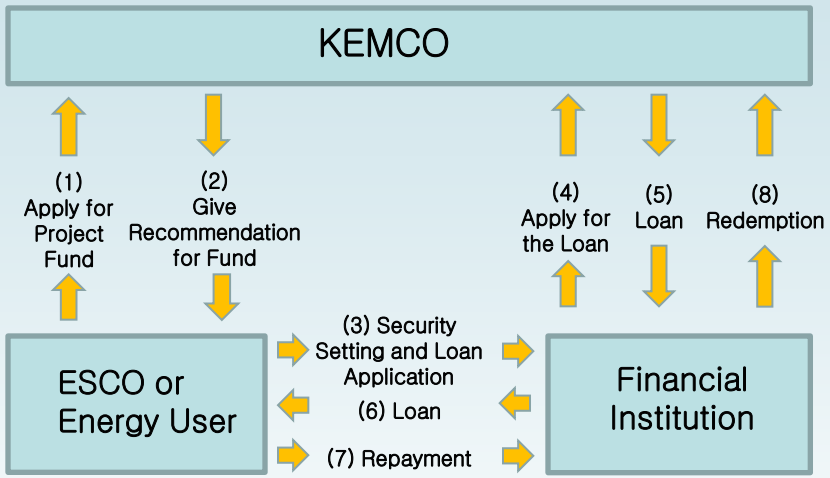
7.Factor in Promoting ESCO Program in Korea

Expert Training	● **Training of ESCO with expertise** - Encouraged market access of companies equipped with capital strength and technical skills * Training of Technical Expert in relation to ESCO Registration System, Energy Audit, etc.
ESCO Market Creation	● **Expansion of Project Areas of ESCOs** - Public sector playing the leading role in parallel with private sector's dominance of market ● **Government-led Pilot Project for Identification of New Areas**
Presenting Business Model	● **Presentation of ESCO Business Model for ESCO Market Creation** - KEMCO implemented pilot project on High Efficiency Lighting Replacement
Guideline Distribution	● **Development of Standard Contract Model and Distribution of Guideline** - Established regulations on distribution and measurement of cost savings resulting from project

8. Financing Mechanism of ESCO Program in Korea



Loan Procedure



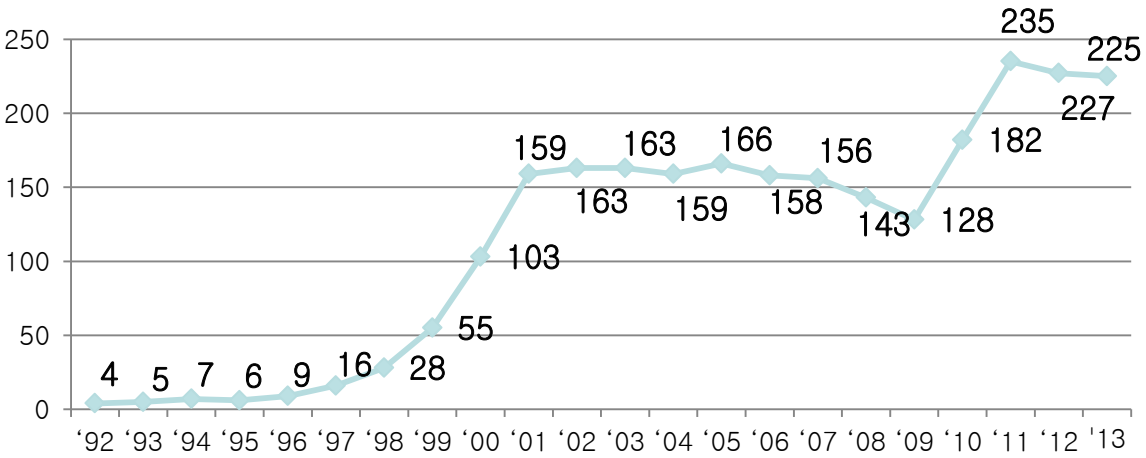
- Offering of Loan after Lend Agreement between KEMCO and Financial Institution
- KEMCO issued Recommendation after reviewing ESCO Business
  - Operation of Reviewing Committee for Project Identification/Recommendation

- KEMCO conducts an inspection on ESCO Program and its target facilities twice every year, and based on the results, decides to add new facilities or remove several existing ones
- Investment Project Areas of ESCOs(Offering of Loan)
  - 69 Projects on the Installation of Energy Efficient Facilities and Demand-Side Management Facilities
  - Projects on Renewable Energy Installation, Repair and Renovation of Insulation System, Emission Reduction, and Process Improvement

✓ MOTIE : Ministry of Trade, Industry and Energy, KEMCO : Korea Energy Management Corporation

9. ESCO Program in Korea

1.Registered ESCOs



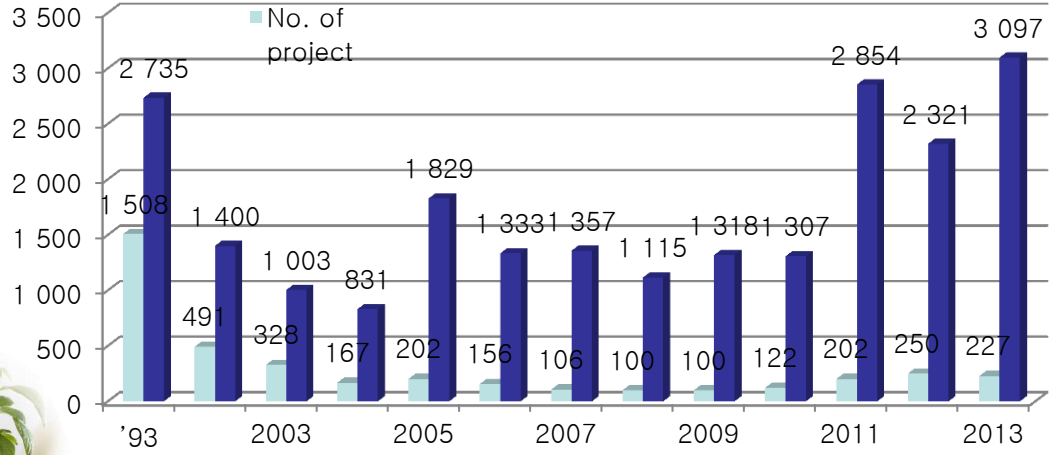
- In 1992, 4 Companies were registered
- Huge Increase between 1997 and 2001
- Steady Increase since 2009
- By 2013, 225 Companies were registered

➡ KEMCO manages Registration since 1999

- Requirement for Registration
  - Capital, Expert, Equipment, etc.

➡ The Criteria is stated in the Article 25 of the Rational Utilization Act

2. Financial Support for ESCO Program by Year('93~'13)



- Inception Phase
  - Annual average of 5 billion wons from 1993 to 1997
- Development Phase
  - -ESCO market grows according to the activation scheme by the government in 1998

➡ Enlargement of project size (0.9~1.4 billion won per project)

KOREA ENERGY MANAGEMENT CORPORATION

Ref. Outcomes of ESCO Program(Overseas)

Presentation on ESCO in Guangdong Province ('12.09.19)

Object : Identification of Korea-Guangdong Pilot Project

Participants : 80 from Korea's ESCOs and Energy Companies in Guangdong

Activity : Presentation by 7 ESCOs and One-on-One Consulting

The 3rd Korea-Guangdong Economic Development Forum('12.11.28)

Main Achievement :

1) The Signing of MOU between KEMCO-Guangdong on Energy Conservation Cooperation

2) The Signing of MOU between ESCO Association and Guangzhou Energy Saving Association

3) ESCO Road Show(with participation of 10 ESCOs)

III

Tax benefits & Tariff Policy

1. Tax Benefits

- **Tax Incentive(Income Tax or Corporate Tax) for energy efficiency investment**
  - 10% tax deduction in ~2008
  - 20% tax deduction in 2009~2010
  - 10% tax deduction in 2011~2013
  - 3~10% tax deduction in 2014~2016

    ※ big business 3% mid-sized businesses 5% smaller businesses 10%

- **The tax credit is available for**
  - Installation of energy-saving facilities
  - New & Renewable energy facilities
  - Other facilities

- **The enactment of a legal rationale for providing tax benefits for smaller businesses in ESCO projects (2010)**

2. Tariff Policy

- **Of production and utilization of equipment used in the New & Renewable energy, goods over imports which are difficult to product domestically reduce the customs duty system when customs clearance proceeds**
  - **Only for the smaller businesses**
  - **Reduced tariff rate is 50/100**
  - **Sunset date : December 31, 2015**
- **Equipment for the production: manufacturing machinery for the production of new & renewable energy equipment, equipment parts, materials, organizations involved in manufacturing.**
- **Equipment for the use: equipment for use in renewable energy, electricity, fuel and heat-producing equipment or its parts belong, materials, instruments**

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